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PRECISION AND ACCURACY ASSESSMENTS
FOR STATE AND LOCAL AIR MONITORING NETWORKS
1985

by

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16. ABSTRACT

Precision and accuracy data obtained from State and local agencies during 1985 are summarized and evaluated. Some comparisons are made with the results reported for prior years to determine any trends. Some trends indicated continued improvement in the completeness of reporting of precision and accuracy data. The national summaries indicate a further improvement in the precision and accuracy assessments of the pollutant monitoring data collected. The annual results from each reporting organization are given so that comparisons may be made from year to year and also with other reporting organizations.

A comparison of the precision and accuracy data from the Precision and Accuracy Reporting System with those from the independent performance audit program conducted by the Environmental Monitoring Systems Laboratory is given.

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FOREWORD

Measurement and monitoring research efforts are designed to anticipate potential environmental problems, to support regulatory actions by developing an in-depth understanding of the nature and processes that impact health and the ecology, to provide innovative means of monitoring compliance with regulations, and to evaluate the effectiveness of health and environmental protection efforts through the monitoring of long-term trends. The Environmental Monitoring Systems Laboratory, Research Triangle Park, North Carolina, has the responsibility for assessment of environmental monitoring technology and systems; implementation of agency-wide quality assurance programs for air pollution measurement systems; and supplying technical support to other groups in the Agency including the Office of Air and Radiation, the Office of Toxic Substances, and the Office of Enforcement.

Ambient air quality data collected by states and local agencies are used in planning the nation's air pollution control strategy, in determining if National Ambient Air Quality Standards are being achieved, and in determining long-term trends of air quality. Prior to the regulations of May 10, 1979, the procedures used in site selection, controlling equipment, and calculating and validating data varied considerably among agencies. These regulations serve to improve and make more uniform the quality assurance programs of the state and local agencies and to require the assessment and reporting of data quality estimates for precision and accuracy. Reporting of precision and accuracy data was required beginning for calendar year 1981. Previous reports summarized the results for 1981, 1982, 1983 and 1984. This report summarizes and evaluates the results for 1985.

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ABSTRACT

Precision and accuracy data obtained from State and local agencies during 1985 are summarized and evaluated. Some comparisons are made with the results reported for previous years to determine the indication of any trends. Some trends indicated continued improvement in the completeness of reporting of precision and accuracy data. The national summaries indicate a further improvement in the precision and accuracy assessments of the pollutant monitoring data collected. The annual results from each reporting organization are given so that comparisons may be made from year-to-year and also with other reporting organizations.

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SECTION 1

INTRODUCTION

The purpose of this document is to report the fifth year of data from the Precision and Accuracy Reporting System (PARS). Federal regulations promulgated on May 10, 1979, require quality assurance precision and accuracy (P and A)* data to be collected. Collection started January 1, 1981, according to requirements set forth in 40 CFR Part 58 Appendix A.[1] These requirements provide for more uniform Quality Assurance programs and specific precision and accuracy assessment and reporting requirements across all State and local air monitoring agencies.

The major portion of this report consists of summarizations and evaluations of the P and A data obtained by the efforts of the States and local agencies. In addition, comparisons have been made of the accuracy data collected for PARS with the results of the National Performance Audit Program (NPAP) which has been an ongoing program conducted by the Environmental Monitoring Systems Laboratory (EMSL) since the early 1970's.

These summarizations and evaluations of precision and accuracy data serve the following purposes:

1. Quantitative estimates of the precision and accuracy of their ambient air monitoring data are available to State and local agencies.
2. A comparison of the data from all the agencies may indicate the need to improve quality assurance systems in specific reporting organizations.
3. An evaluation of the results may indicate a need for improvement in monitoring methodology.
4. The assessments provide users of data from the State and Local Air Monitoring Stations (SLAMS) network a quantitative estimate of the precision and accuracy of the ambient air quality data.

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*When one speaks of precision and accuracy of measurement data,[2] one really means the precision and accuracy of the measurement process from which the measurement data are obtained. Precision is a measure of the "repeatability of the measurement process under specified conditions." Accuracy is a measure of "closeness to the truth."

Ambient air quality data, collected by States and local agencies since 1957, have been stored in the National Aerometric Data Bank (NADB). These data are used in (1) planning the nation's air pollution control strategy, (2) determining if the National Ambient Air Quality Standards are being achieved, and (3) determining long-term trends of air quality. Prior to the EPA air monitoring regulations of May 10, 1979, the procedures used in selecting monitoring sites, operating and controlling the equipment, and calculating, validating and reporting the data varied considerably among agencies. Frequently the procedures being used were not well-documented. These conditions made it difficult to intercompare data from different sites and agencies. Furthermore, little information was available on the reliability of the monitoring data.

To help alleviate these problems, EPA's air monitoring regulations imposed uniform requirements on network design, siting, quality assurance, monitoring methods, and data reporting after December 30, 1980. For example, only EPA reference, equivalent, or other EPA-approved air monitoring methods were to be used. Also, calibration standards were to be traceable to the National Bureau of Standards (NBS) or other authoritative standards. Further, the quality assurance systems of the states were required to be documented and approved by the EPA Regional Offices. Finally, the reporting organizations must also follow specific procedures when assessing the P&A of their measurement systems and must report the P&A data to EPA quarterly. Starting January 1, 1981, these regulations became effective for National Air Monitoring Sites (NAMS), and beginning January 1, 1983, for all State and Local Air Monitoring Stations (SLAMS).

The precision assessments were determined by performing repeated measurements of ambient-level "calibration" gases at two-week intervals for continuous methods, or by obtaining duplicate results from collocated samplers for manual methods. Table 1 summarizes the requirements for performing precision checks. The accuracy assessments were generally determined by analyzing blind audit materials traceable to NBS. Table 2 shows the concentration levels. During each calendar year, each site or instrument must be audited at least once. Details concerning the specific procedures and computations used to assess P&A are contained in the regulations.

TABLE 1. REQUIREMENTS FOR PERFORMING PRECISION CHECKS FOR SLAMS NETWORK

Parameter	Precision check	Frequency
CO (continuous analyzer)	8 - 10 ppm	Once each 2 weeks
SO_2, NO_2, and O_3 (continuous analyzer)	0.08 - 0.10 ppm	Once each 2 weeks
TSP, SO_2, and NO_2 (manual)	Collocated sampler (Ambient concentration)	Once each 6 days
Pb	Duplicate strips (Ambient concentration)	Once each 6 days

TABLE 2. CONCENTRATION LEVELS FOR CONDUCTING ACCURACY AUDITS OF SLAMS NETWORK

Parameter	Level 1	Level 2	Level 3	Level 4
SO_2, NO_2, O_3 (continuous)	0.03-0.08 ppm	0.15-0.20 ppm	0.35-0.45 ppm	0.80-0.90 ppm
CO	3-8 ppm	15-20 ppm	35-45 ppm	80-90 ppm
TSP (flow only)		1.13-1.70 m^3/min		
SO_2 (manual)*	0.013-0.020 ppm	0.033-0.040 ppm	0.053-0.059 ppm	
NO_2 (manual)*	0.018-0.028 ppm	0.046-0.055 ppm	0.074-0.083 ppm	
Pb**	0.6-1.8 $\mu g/m^3$	3.5-5.9 $\mu g/m^3$		

*Concentration levels corresponding to flow rates of .2 L/min

**Concentration levels corresponding to flow rates of 50 cfm.

When a request is made to the NADB for ambient air quality monitoring data, the requestor receives the P and A data along with the routine monitoring data. The requestor, or user, of the data can feel more confident that the data are of the quality indicated by the assessments and that the data have been obtained from an agency having a planned and documented quality assurance system. The EPA can also rely on the data in producing its control strategies and determining whether standards have been met.

SECTION 2

NATIONAL RESULTS

NATIONAL DATA REPORTING

A measure of the completeness of the precision and accuracy data reporting is the percentage of reporting organizations which were required to report data for a particular pollutant which have reported results for at least one calendar quarter for that pollutant. Table 3 shows the progress in data reporting over the years 1981 through 1985. Improvement continues for the continuous NO_2 method; the percentages for TSP, continuous CO, SO_2 and O_3 methods remained the same as for 1984 or have slightly decreased. No particular reasons for the decreases have been identified. Reporting for the manual methods for Pb, SO_2 and NO_2 was required by the regulations beginning January 1, 1983. Reporting for Pb has improved from 1984 to 1985. Reportings for the manual methods for SO_2 and NO_2 are essentially the same as for 1984.

The reporting organizations which should have reported data for 1985 but did not are listed in Section 3.

TABLE 3. PERCENT OF REPORTING ORGANIZATIONS REPORTING PRECISION AND ACCURACY DATA

Pollutant measurement	1981	1982	1983	1984	1985
CO	77	89	99	99	96
SO_2	82	93	96	97	97
NO_2	56	72	88	94	96
O_3	83	89	99	99	95
TSP	94	97	99	99	99
Pb	--	--	93	92	96
SO_2 (manual)	--	--	75	80	75
NO_2 (manual)	--	--	86	100	100

NATIONAL ACTIVITY IN PERFORMING PRECISION CHECKS AND ACCURACY AUDITS

A review of Tables 4 and 5 clearly indicates the considerable increase in the total number of precision and accuracy checks from the beginning of the PARS system through 1984 for all pollutant methods except the manual

TABLE 4. YEAR-TO-YEAR ACTIVITY OF PRECISION AND ACCURACY ASSESSMENTS FOR THE MANUAL METHODS

			Precision			Accuracy	
Pollutant	Year	Avg. no. of samplers	Avg. no. of collocated sites	No. of valid collocated data pairs	No. of data pairs per site	No. of audits x levels	No. of audits per sampler
TSP	1981	2,334	317	13,335	42.1	5,840	2.5
	1982	2,538	338	16,281	48.2	6,461	2.6
	1983	2,662	342	16,816	49.2	6,989	2.6
	1984	2,650	338	17,152	50.8	7,436	2.8
	1985	2,455	331	16,462	49.7	6,820	2.8
Pb	1981	73	13	473	36.4	581	4.0
	1982	164	32	1,704	53.2	655	2.0
	1983	452	76	3,885	51.1	1,389	1.5
	1984	492	92	3,937	42.8	1,657	1.7
	1985	486	86	3,508	40.8	1,616	1.7
SO_2	1981	172	34	965	28.4	711	1.4
	1982	63	21	706	33.6	551	2.9
	1983	46	15	389	25.9	301	1.1
	1984	36	10	297	28.3	203	1.9
	1985	20	6	185	30.8	174	2.9
NO_2	1981	185	38	1,422	37.4	769	4.2
	1982	83	25	1,168	46.7	583	2.3
	1983	77	25	1,324	53.0	348	1.5
	1984	50	13	691	53.2	175	1.2
	1985	36	10	469	46.9	161	1.5

TABLE 5. YEAR-TO-YEAR ACTIVITY OF PRECISION AND ACCURACY ASSESSMENTS FOR THE CONTINUOUS METHODS

Pollutant	Year	Avg. no. of analyzers	Precision		Accuracy	
			No. of precision checks	Precision checks per analyzer	No. of accuracy audits x levels*	No. of audits per analyzer
CO	1981	282	8,248	29.2	856	1.01
	1982	354	13,089	37.0	1,180	1.11
	1983	447	15,714	35.2	1,501	1.12
	1984	424	14,692	34.7	1,265	0.99
	1985	426	14,465	34.0	1,143	0.89
SO_2	1981	420	10,851	25.8	1,016	0.81
	1982	566	23,144	36.6	1,248	0.73
	1983	633	36,887	58.3	1,625	0.86
	1984	630	38,312	60.8	1,500	0.79
	1985	571	22,863	40.0	1,397	0.82
NO_2	1981	127	2,498	19.7	320	0.84
	1982	193	6,876	35.6	442	0.76
	1983	235	9,299	39.6	635	0.90
	1984	240	8,653	36.0	589	0.82
	1985	232	7,695	33.2	550	0.79
O_3	1981	404	10,536	26.1	1,162	0.96
	1982	514	18,964	36.9	1,328	0.86
	1983	598	21,342	35.7	1,705	0.95
	1984	579	20,031	34.6	1,629	0.94
	1985	574	18,822	32.8	1,499	0.87

*Levels 1, 2, and 3 only.

SO_2 and NO_2 methods. The increase in effort resulted because of the effectivity of the regulation requirements for P and A data for the NAMS sites on January 1, 1981 and for the SLAMS on January 1, 1983. The reduction in the manual NO_2 and SO_2 methods has resulted from the replacement of the manual methods with continuous analyzers. The average number of analyzers/samplers and the total number of precision checks have decreased from 1983 and 1984 for all measurements. Further, the numbers of precision checks per site have decreased somewhat for all measurement methods except for the manual SO_2. The reduction of the number of analyzers/samplers since 1983 has reresulted in corresponding decreases in the number of precision checks and accuracy audits. However, the number of accuracy audits per analyzer/sampler has remained about the same.

For the manual methods, Table 4 shows the average number of data pairs per collocated site for precision checks and the average number of accuracy audits per sampler. If the collocated samplers are operated every sixth day, there should be 365/6 = 61 data pairs per year, assuming that all the results are above the detection limit. This level of precision checks is being approached for the TSP, Pb, and NO_2 methods, but for the manual SO_2 method, the number of precision checks is only about 50 percent of the required number. The regulations require that each TSP sampler/site be audited for accuracy at least once each year, and that the laboratory for the other manual methods be audited at least twice per quarter. The computed average number of audits per TSP sampler is well above the required frequency.

For the continuous methods, the minimum frequency for precision checks is once every two weeks or 26 per year. Table 5 indicates that each year between 30 and 40 checks per analyzer are being made. The regulations require at least one accuracy audit per analyzer/site per year. The average number of audits per analyzer for the continuous methods indicates that from 11 to 21 percent of the analyzers are not being audited as required by the regulations. (Note: The tabulated values consider only the audits at the three lower concentration levels. Analyzers requiring level four audits, e.g., episode monitors, are not considered.)

A comparison can be made between the average number of samplers for which PARS data are reported and the number of SLAMS/NAMS sites in the nation:

		Continuous methods				Manual methods			
		SO_2	NO_2	O_3	CO	TSP	Pb	SO_2	NO_2
No. SLAMS/NAMS sites	1984	540	252	600	439	2477	382	14	15
	1985	538	232	617	440	2424	403	6	14
Avg. no. samplers reporting PARS data	1984	630	240	579	424	2650	492	36	50
	1985	522	228	612	432	2388	398	9	13

It appears that for all of the manual methods and for continuous SO_2 in 1984, P and A data from more samplers were received than existed as

SLAMS/NAMS sites. Presumably, these extra or additional samplers are being used for special purpose monitoring and/or both samplers at collocated sites (manual methods) are being counted. However, in 1985 the average number of samplers having reported PARS data is less than the number of SLAMS/NAMS sites. This would indicate that several SLAMS sites were without samplers during the year.

1985 RESULTS FROM THE PARS PROGRAM

Estimates of precision and accuracy are required to be computed and reported for each calendar quarter by each Reporting Organization (a State or local agency) as percentage deviation values. For precision, the repeatability for each check is measured as the deviation from the expected value as a percentage of the expected value. For accuracy, the deviation of the audit value from the true value is measured as a percentage of the true value. For both precision and accuracy, 95 percent probability limits are computed for the percentage values from the average and standard deviations of the individual percentage values:

$$\overline{D} \pm 1.96\ S$$

where $\overline{D}$ = the average of the individual percent differences;
S = the standard deviation of the individual percent differences;*
1.96 = the multiplication factor corresponding to 95% probability.

It is these upper and lower 95% probability limits which are reported and discussed in this report.

Moreover, it should be noted that the data and the evaluations presented in this report include any outlier values which may have been reported by the States and local agencies. It is possible that the presence of outliers might influence such comparisons by having undue impact on average values for individual reporting organizations.

The probability limits presented throughout this report for states, regions, and the nation have been calculated using the formulas shown in Appendix B and thereby most appropriately reflect the total variability within the entity involved. (Note: Probability limit values in this report and the 1984[5] report in Tables 6, 7, 12, and 14 and Figures 1 through 10 cannot be validly compared with corresponding tables and figures of previous reports.[3,4] The limits given in this report are generally wider than corresponding limits of previous reports for the reasons discussed in Appendix B.)

Table 6 exhibits the national probability limits for each of the manual pollutants.

---

*For the precision of manual methods obtained from paired observations, the standard deviation, S, is divided by $\sqrt{2}$, to obtain variability estimates that apply to individual reported values.

TABLE 6. NATIONAL PRECISION AND ACCURACY PROBABILITY LIMIT VALUES FOR MANUAL METHODS FOR 1985

Pollutant	Precision Probability limits (%) Lower	 Upper	Accuracy Probability limits (%) Level 1 Lower	 Upper	 Level 2 Lower	 Upper	 Level 3 Lower	 Upper
TSP	-15	+16	--	--	-8	+8	--	--
Lead	-18	+19	-12	+10	-10	+8	--	--
Sulfur dioxide	-42	+35	-33	+17	-18	+9	-19	+9
Nitrogen dioxide	-27	+29	-7	+8	-3	+5	-3	+5

The precision limits reflect the repeatability of the methodology used in the field to collect and analyze the samples at ambient levels. The spread of the limits may be somewhat inflated due to measurements at relatively low concentration levels.

The accuracy of the manual methods indicates the limits at predetermined concentration levels for the chemical analysis performed in the samples for lead, sulfur dioxide, and nitrogen dioxide. For the TSP method, the accuracy measurement is for the flow rate only. The probability limits for manual accuracy are very good and reflect the quality of work done in the chemical laboratories for lead, sulfur dioxide, and nitrogen dioxide analyses, and in the field for flow rate measurement for the TSP method. Because of the continual replacement of the manual SO_2 and NO_2 methods with continuous methods, further discussion of the manual methods is limited. The detailed results, however, are tabulated in Appendix D for each reporting organization.

The precision and accuracy limits for automated methods are presented in Table 7.

TABLE 7. NATIONAL PRECISION AND ACCURACY PROBABILITY LIMIT VALUES FOR AUTOMATED ANALYZERS FOR 1985

	Precision Probability limits (%)		Accuracy Probability limits (%)							
			Level 1		Level 2		Level 3		Level 4	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
CO	-9	+9	-14	+13	-8	+8	-8	+7	-19	+14
SO_2	-9	+7	-16	+14	-12	+12	-13	+12	-8	+10
NO_2	-12	+12	-20	+21	-13	+12	-12	+10	-14	+5
O_3	-10	+9	-14	+12	-11	+9	-10	+8	-7	+5

NATIONAL PRECISION RESULTS COMPARISON

Figure 1 shows the national probability limits for precision for the various methods. With data from the four most recent years, some minor trends are evident. Some slight improvement, as measured by a reduction in the spread of the limits, is noted for TSP, Pb, and the continuous methods. The slight but persistent negative bias for the continuous SO_2 method indicates that on the average there is some negative instrument drift from the most recent calibration or instrument adjustment to the time of the biweekly precision check.

Although the manual methods for Pb, SO_2, and NO_2 were not required to be reported until 1983, a number of agencies began reporting in 1981. The results for Pb show a continuing improvement. The manual SO_2 and NO_2 methods are much more variable than the continuous methods. And although they have shown considerable improvement over the five-year period, the results for 1985 are somewhat more than for 1984.

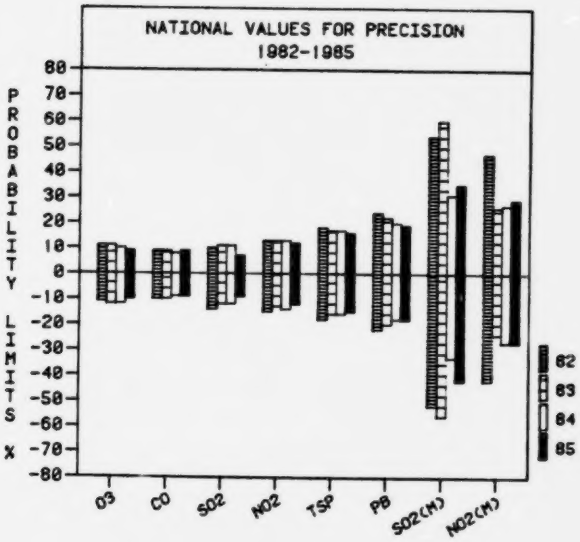

Figure 1. National precision probability limits for 1982 through 1985.

NATIONAL ACCURACY RESULTS COMPARISON

Figures 2a and 2b show the national values for accuracy audits for the continuous and manual methods, respectively, for the four most recent years, 1982-1985. Improvement for the manual methods is not evident except perhaps for Pb and NO_2. The variability for the TSP method remains the same and the SO_2 method has shown a definite increase. The results for the manual methods for SO_2 and NO_2 vary considerably from year to year because the methods are used in only 2 or 3 Regions and are being replaced by the continuous methods. Slight improvement is evident for all the continuous methods. The continuous methods for SO_2 and NO_2 show more inaccuracy than all other methods. However, it is pointed out that the accuracy audits for the manual methods check only a portion of the measurement method.

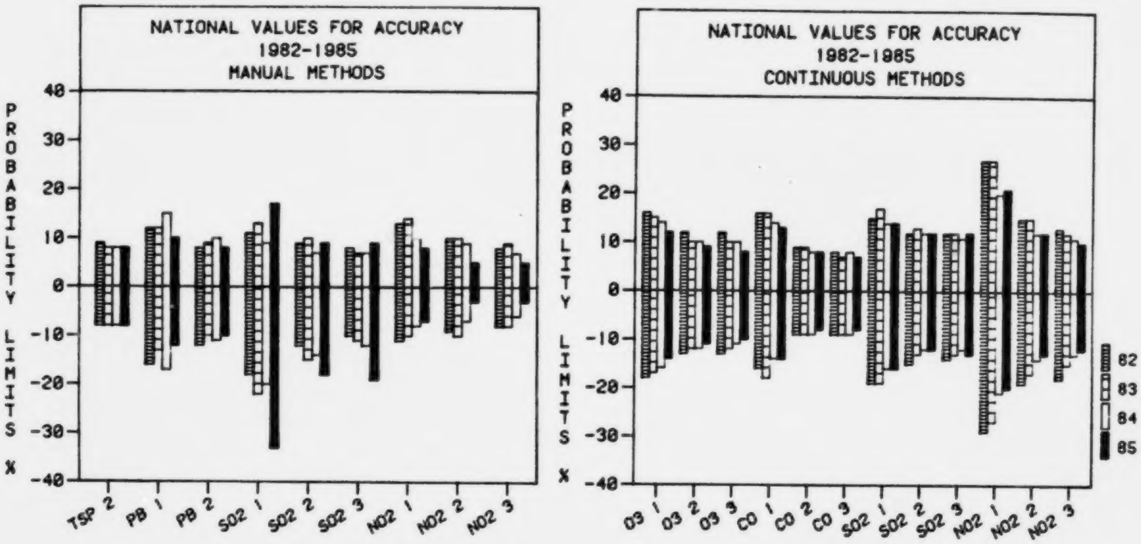

Figure 2. National accuracy probability limits for 1982 through 1985.

Although the continuous NO_2 method is more variable than the other methods, it has shown the greatest improvement, particularly for the level 1 concentration.

The general, and expected, pattern of variability across levels is very evident, with the greatest percentage variability at the lowest concentration levels. The slight negative biases for the continuous SO_2 method is consistent across all three levels. A possible cause is that, on the average, a negative drift occurs with these analyzers from the time of last calibration or instrument adjustment until the time of the accuracy audit.

NATIONAL FREQUENCIES

Table 8 contains the 1985 percentiles for precision probability limits and accuracy probability limits at levels 1, 2, 3, and 4. The percentiles are based on the total number of reporting-organizationquarters of data. The individual quarter of data consists of an upper and lower probability limit for precision, and upper and lower probability limits for accuracy for each of the levels. The narrower the distribution, the better the data quality. For example, for precision for CO, the upper 5 percentile value for the upper limit is +14%, and the lower 5 percentile value for the lower limit is -16%. It can be seen from both Figure 2 and Table 8 that CO shows the tightest range of the pollutants presented. The variabilities shown in Table 8 are consistent with those shown in Figures 1 and 2. The 95th percentiles provide criteria beyond which a reported probbability limit may be considered excessive and for which the computation should be rechecked or the measurement system investigated and corrected, if so indicated.

TABLE 8. PERCENTILES OF QUARTERLY PROBABILITY LIMITS FOR ALL REPORTING ORGANIZATIONS (1985)

MANUAL METHODS

POLLUTANT	NUMBER OF	LOWER PROBABILITY LIMIT												STD	UPPER PROBABILITY LIMIT												STD
LEVEL	REP.ORG.-QTR	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	DEV	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	DEV
I11101 - TSP																											
PRECISION	558	-58	-39	-23	-19	-14	-10	-06	-04	-03	+01	+13	-11	7.4	-07	-01	+02	+04	+07	+10	+14	+22	+28	+51	+89	+12	9.6
ACC-LVL 2	545	-35	-23	-17	-13	-09	-05	-03	-01	-00	+02	+06	-06	5.2	-08	-04	-01	+01	+03	+06	+09	+12	+16	+31	+48	+07	6.2
I12128 - PB																											
PRECISION	294	-64	-62	-34	-26	-18	-10	-06	-03	-01	-00	+03	-13	10.8	-08	-00	+01	+03	+06	+10	+17	+28	+35	+83	+92	+14	13.1
ACC-LVL 1	297	-38	-33	-22	-18	-10	-06	-03	-01	+01	+03	+07	-08	7.1	-09	-09	-02	-00	+02	+05	+09	+14	+19	+30	+50	+06	6.7
ACC-LVL 2	301	-30	-22	-17	-14	-08	-05	-02	-00	+01	+04	+08	-06	5.6	-07	-06	-03	-01	+01	+03	+06	+10	+13	+20	+29	+04	5.0
I42401 - SO2																											
PRECISION	12	-82	-82	-82	-62	-43	-33	-20	-04	-00	-00	-00	-37	22.9	-00	-00	-00	+03	+19	+29	+37	+39	+70	+70	+70	+26	18.4
ACC-LVL 1	20	-64	-64	-48	-40	-31	-17	-10	-06	-06	-06	-06	-23	15.5	-00	-00	+02	+03	+05	+09	+13	+27	+64	+64	+64	+12	14.1
ACC-LVL 2	20	-33	-33	-24	-21	-17	-09	-07	-02	-01	-01	-01	-13	8.1	-00	-00	-00	+01	+02	+05	+07	+14	+15	+15	+15	+05	4.3
ACC-LVL 3	20	-34	-34	-25	-22	-20	-10	-04	-02	-01	-01	-01	-12	9.1	-02	-02	+01	+01	+02	+05	+07	+11	+17	+17	+17	+05	4.2
I42602 - NO2																											
PRECISION	21	-56	-56	-53	-51	-26	-16	-11	-06	-05	-04	-04	-22	16.7	+04	+04	+05	+05	+08	+17	+32	+51	+56	+85	+85	+24	20.9
ACC-LVL 1	21	-13	-13	-12	-08	-06	-05	-04	-03	-02	-01	-01	-05	2.9	-02	-02	+02	+02	+03	+05	+08	+11	+13	+14	+14	+06	4.0
ACC-LVL 2	21	-11	-11	-06	-05	-04	-03	-01	-01	-00	-00	-00	-03	2.5	-01	-01	+01	+01	+02	+04	+05	+08	+09	+10	+10	+04	2.7
ACC-LVL 3	21	-10	-10	-09	-04	-04	-02	-01	-01	-00	-00	-00	-03	2.6	-00	-00	+01	+01	+02	+04	+05	+06	+08	+09	+09	+04	2.3

(Continued)

TABLE 8. PERCENTILES OF QUARTERLY PROBABILITY LIMITS FOR ALL REPORTING ORGANIZATIONS (1985)

AUTOMATED ANALYZERS

POLLUTANT	NUMBER OF	LOWER PROBABILITY LIMIT												STD	UPPER PROBABILITY LIMIT												STD
LEVEL	REP.ORG.-QTR	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	DEV	MIN	01%	05%	10%	25%	50%	75%	90%	95%	99%	MAX	MEAN	DEV
C42101 - CO																											
PRECISION	377	-50	-24	-16	-13	-10	-06	-04	-02	-01	+02	+07	-07	5.2	-04	-01	+01	+01	+03	+06	+09	+13	+14	+24	+26	+07	4.7
ACC-LVL 1	305	-54	-41	-27	-21	-14	-09	-04	-01	+01	+04	+09	-10	8.8	-12	-07	-03	-01	+02	+07	+13	+20	+25	+40	+55	+08	9.2
ACC-LVL 2	305	-33	-23	-16	-14	-08	-05	-02	-01	-00	+05	+09	-06	5.6	-05	-04	-02	-00	+02	+05	+08	+13	+17	+21	+25	+06	5.4
ACC-LVL 3	302	-34	-31	-15	-13	-08	-05	-02	-00	+01	+03	+04	-06	5.7	-08	-04	-01	-00	+02	+04	+07	+11	+14	+21	+31	+05	5.0
ACC-LVL 4	7	-34	-34	-34	-34	-12	-03	-01	-00	-00	-00	-00	-08	12.2	-00	-00	-00	-00	+02	+05	+16	+18	+18	+18	+18	+07	7.1
C42401 - SO2																											
PRECISION	414	-49	-34	-23	-19	-14	-11	-07	-05	-04	-00	+08	-11	6.2	-09	-03	+01	+02	+04	+07	+10	+14	+17	+25	+51	+08	5.6
ACC-LVL 1	335	-83	-57	-29	-25	-17	-11	-06	-01	-00	+07	+34	-12	11.1	-20	-08	-04	-01	+02	+07	+14	+20	+29	+64	+99	+10	12.5
ACC-LVL 2	338	-80	-43	-23	-18	-13	-08	-04	-01	+01	+06	+48	-10	9.3	-17	-06	-03	-01	+04	+08	+12	+18	+22	+46	+99	+09	10.2
ACC-LVL 3	331	-81	-48	-23	-20	-13	-09	-04	-01	-00	+06	+45	-10	9.8	-15	-06	-02	-00	+03	+07	+12	+17	+21	+45	+99	+08	10.0
ACC-LVL 4	46	-25	-25	-20	-16	-13	-06	-03	+02	+03	+05	+05	-07	6.8	-08	-08	-01	+02	+04	+07	+12	+17	+18	+26	+26	+08	6.4
C42602 - NO2																											
PRECISION	247	-87	-51	-26	-20	-14	-10	-07	-04	-02	+04	+09	-11	9.3	-06	-04	+01	+03	+06	+10	+14	+23	+32	+54	+82	+12	10.7
ACC-LVL 1	185	-87	-54	-39	-31	-18	-10	-04	-00	+04	+13	+18	-13	13.8	-26	-13	-03	-00	+03	+10	+19	+33	+48	+99	+99	+14	17.2
ACC-LVL 2	185	-38	-29	-23	-18	-12	-08	-04	-01	-00	+06	+17	-09	7.4	-11	-09	-03	-00	+03	+07	+12	+19	+27	+48	+51	+09	9.3
ACC-LVL 3	183	-34	-31	-20	-18	-12	-06	-03	-00	-00	+04	+05	-08	7.1	-17	-10	-04	-01	+02	+05	+11	+17	+20	+31	+50	+07	8.1
ACC-LVL 4	12	-21	-21	-21	-17	-13	-10	-07	-07	-06	-06	-06	-11	4.4	-09	-09	-09	-04	-01	+02	+06	+08	+13	+13	+13	+02	5.8
C44201 - O3																											
PRECISION	403	-72	-30	-18	-15	-11	-08	-06	-04	-02	-01	+03	-09	6.3	-07	-03	+01	+02	+04	+07	+10	+14	+16	+21	+50	+07	5.2
ACC-LVL 1	322	-86	-43	-28	-23	-14	-09	-04	-01	+01	+05	+05	-10	9.9	-12	-04	-01	+01	+04	+08	+12	+17	+21	+33	+58	+09	7.4
ACC-LVL 2	323	-31	-27	-19	-15	-11	-07	-04	-01	-00	+03	+05	-08	6.2	-17	-03	-00	+01	+03	+05	+10	+13	+15	+23	+40	+06	5.7
ACC-LVL 3	322	-66	-29	-20	-15	-10	-07	-04	-01	-00	+05	+06	-08	6.9	-18	-04	-01	-00	+02	+05	+09	+13	+15	+21	+44	+06	5.8
ACC-LVL 4	26	-20	-20	-14	-11	-08	-07	-04	-02	-01	+01	+01	-07	4.3	-01	-01	+01	+01	+03	+04	+06	+09	+10	+12	+12	+05	2.9

SECTION 3

REGIONAL RESULTS

REGIONAL DATA REPORTING

All reporting organizations having SLAMS/NAMS sites for the criteria pollutants are required to report P and A data. The numbers of such reporting organizations are listed in Table 9. Note that only four reporting organizations use the manual SO_2 method at SLAMS sites and only one uses the manual NO_2 method.

TABLE 9. TOTAL NUMBER OF REPORTING ORGANIZATIONS REQUIRED TO REPORT FOR THE YEAR 1985, BY POLLUTANT

	Automated methods				Manual methods			
Region	CO C42101	SO_2 C42401	NO_2 C42602	O_3 C44201	TSP I11101	Pb I12128	SO_2 I42401	NO_2 I41602
I	6	6	5	6	6	5	0	0
II	3	4	2	3	4	3	0	0
III	10	11	11	12	16	8	0	0
IV	21	25	11	26	35	11	1	0
V	20	25	13	24	30	15	0	0
VI	10	11	9	10	14	11	1	1
VII	11	9	6	11	12	9	0	0
VIII	5	4	3	3	9	3	0	0
IX	11	9	6	11	12	9	2	0
X	4	3	2	2	4	4	0	0
Nation	101	107	68	108	142	78	4	1

The breakdown of data completeness (defined as the percentage of reporting organizations which reported P&A data to EPA relative to the number required to report each quarter) is given in Table 10.

TABLE 10. PERCENTAGE OF REPORTING ORGANIZATIONS WITH COMPLETE DATA IN PARS FOR THE YEARS 1983, 1984 and 1985

	Automated pollutants												Manual pollutants											
	CO C42101			SO_2 C42401			NO_2 C42602			O_3 C44201			TSP I11101			Pb I12128			SO_2 I42401			NO_2 I41602		
Region	83	84	85	83	84	85	83	84	85	83	84	85	83	84	85	83	84	85	83	84	85	83	84	85
I	85	91	90	92	98	96	56	80	50	79	79	73	98	100	100	95	99	90	--	--	--	--	--	--
II	92	88	88	66	83	63	100	100	88	96	99	67	72	97	88	75	100	100	--	--	--	--	--	--
III	100	100	99	100	100	100	96	98	89	99	100	99	99	100	98	88	95	92	--	--	--	100	--	--
IV	83	84	85	79	87	79	51	63	65	81	79	81	97	99	96	78	80	92	94	100	100	75	100	--
V	78	85	83	77	92	86	65	79	66	76	88	78	99	97	94	89	85	93	--	--	--	100	--	--
VI	91	97	90	82	93	84	70	85	83	96	98	96	95	98	97	83	88	95	--	0	0	63	100	100
VII	78	78	80	69	77	72	68	75	69	80	73	68	97	95	99	66	83	76	--	--	--	0	--	--
VIII	68	98	90	100	98	91	92	92	83	96	100	88	96	100	100	75	83	75	--	--	--	--	--	-
IX	77	89	63	60	93	64	58	94	71	75	95	59	82	95	73	59	74	53	50	43	19	--	--	-
X	88	94	84	88	97	11	81	100	81	94	100	100	100	92	84	59	72	72	--	--	--	--	--	.
Nation	83	90	84	80	92	82	69	88	73	84	91	80	95	98	94	79	85	85	72	64	34	73	100	1

NOTE: -- Means no data was required, there being no SLAMS sites for these pollutants.

From 1984 to 1985, the percentages decreased for most pollutants (except Pb and manual NO_2 which remained the same) and for most region-pollutant combinations, except for

Region I, for TSP
Region II, for CO and Pb
Region III, for SO_2
Region IV, for CO, NO_2, O_3 and Pb
Region V, for Pb
Region VI, for Pb
Region VII, for CO and TSP.

A number of reporting organizations having SLAMS/NAMS sites for certain pollutants have reported no precision or accuracy data for 1985 for these pollutants:

Region	State	Reporting organization Number	Name	Pollutant
I	NH	30001	New Hampshire**	NO_2
II	PR	40001	Puerto Rico	O_3
	VI	55001	Virgin Islands**	SO_2
III	VA	48002	City of Alexandria	NO_2
IV	NC	34003	Mecklenburg Co. Dept. of Environmental Health	SO_2
	TN	44005	Chattanooga-Hamilton Co., Air Pollution Control	CO
V	OH	36016	Mahoning Trumbull Air Pollution Control	NO_2
VI	NM	32001	Environmental Improvement Division, Santa Fe	SO_2 (manual)
VII	KS	17001	State of Kansas*	NO_2
	MO	26003	St. Louis City*	Pb
	NE	28002	Lincoln	O_3
IX	AZ	03200	Maricopa County	NO_2
	CA	05036	San Diego**	Pb
	HI	12120	Hawaii	CO
	HI	12120	Hawaii	SO_2
	HI	12120	Hawaii	O_3
	NV	29100	State of Nevada**	CO
	NV	29100	State of Nevada**	O_3
	NV	29300	Clark County**	Pb

(continued)

Region	State	Reporting organization Number	Name	Pollutant
IX	GU	54100	Guam**	SO_2
	GU	54100	Guam**	TSP
	GU	54100	Guam**	SO_2 (manual)

*Repeats from 1984.
**Repeats from 1983 and 1984.

Precision and accuracy reporting for 1985 was complete only for the following Region and pollutant combinations:

Region	Pollutant
I	TSP
II	Pb
III	CO
III	SO_2
III	TSP
IV	SO_2 (manual
VI	NO_2 (manual)
VII	TSP
VIII	TSP
X	O_3

Considering the reporting for all pollutants and all reporting organizations, the reporting organizations of Region III were most complete for 1985 (96%). Region III was also the most complete in 1983 and 1984. Region IX data was the least complete (57%). All regions showed decreased reporting in 1985 compared to 1984.

Region	Percentage of reports complete 83	84	85
I	84	91	83
II	84	95	82
III	97	99	96
IV	80	86	85
V	83	88	83
VI	74	82	81
VII	65	80	77
VIII	88	95	88
IX	66	83	57
X	85	93	82

When considering the various pollutant methods across all Regions, reporting was most complete for the NO_2 manual method and least complete for the manual SO_2 method, the same as for 1984. Only Pb and manual NO_2 remained the same. All others decreased from 1984.

Pollutant	Percentage of reports complete		
	83	84	85
TSP	95	98	94
O_3	84	91	80
CO	83	90	84
SO_2	80	92	82
Pb	79	85	85
NO_2 (manual)	73	100	100
SO_2 (manual)	72	64	34
NO_2	69	88	73

REGIONAL COMPARISONS

Figures 3 through 10 compare the precision and accuracy probability limits for 1982, 1983, 1984, and 1985. These comparisons are presented for each pollutant on a Region by Region basis.

CO (Figure 3)

Only Regions IV, V and VII showed a noticeable improvement from 1984 for precision. Regions II, IV and V were worse in 1985 for accuracy levels 1 and 2 than in 1984. Regions I, III, VI, VII and IX showed consistent improvement at all accuracy levels.

SO_2 (Figure 4)

Regions I and IV were consistent in improvements for precision and all three levels of accuracy; however, Regions II and III were worse in precision and all levels of accuracy. Region V was better in precision, but worse in accuracy.

NO_2 (Figure 5)

More regions showed improvement than not. Regions IV and X were better in precision, but worse at all accuracy levels in 1985 than in 1984.

O_3 (Figure 6)

More regions showed improvement in precision and accuracy for ozone than for any other measurement. These significant improvements are possibly attributed to the use of the standard reference photometers (SRP's) developed by the National Bureau of Standards for EPA and located at:

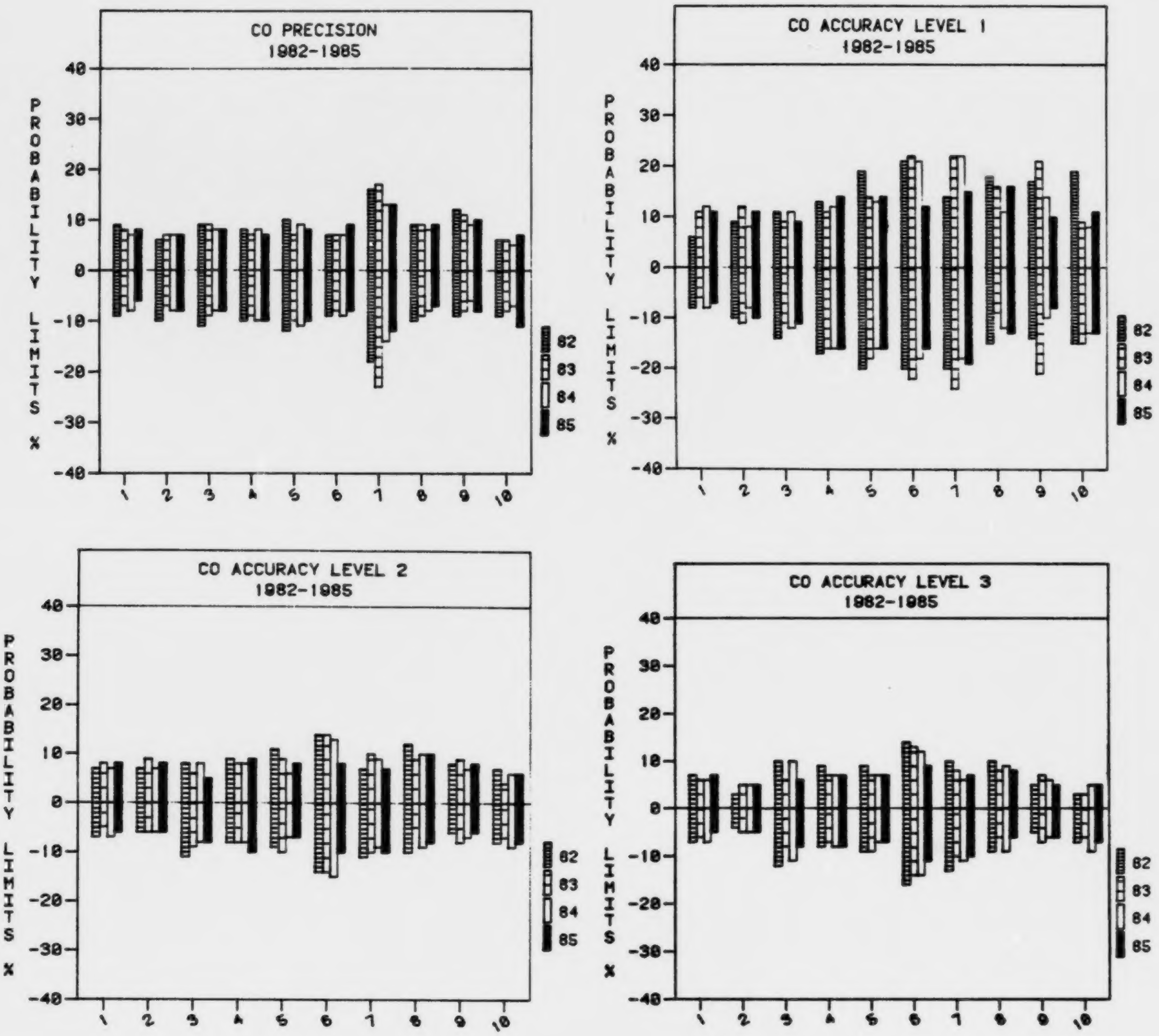

Figure 3. CO precision and accuracy by region for 1982 through 1985.

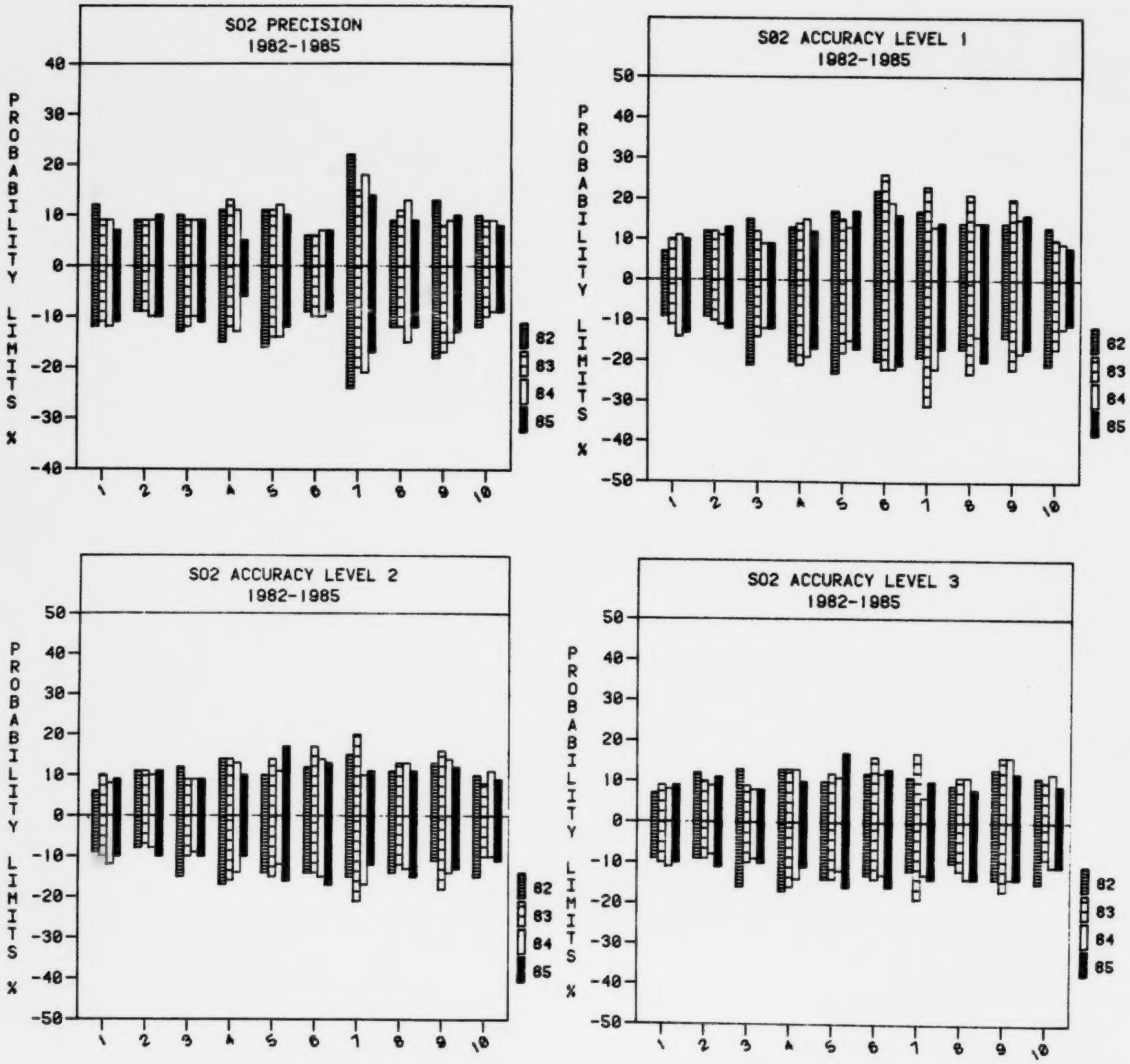

Figure 4. Continuous SO_2 precision and accuracy by region for 1982 through 1985.

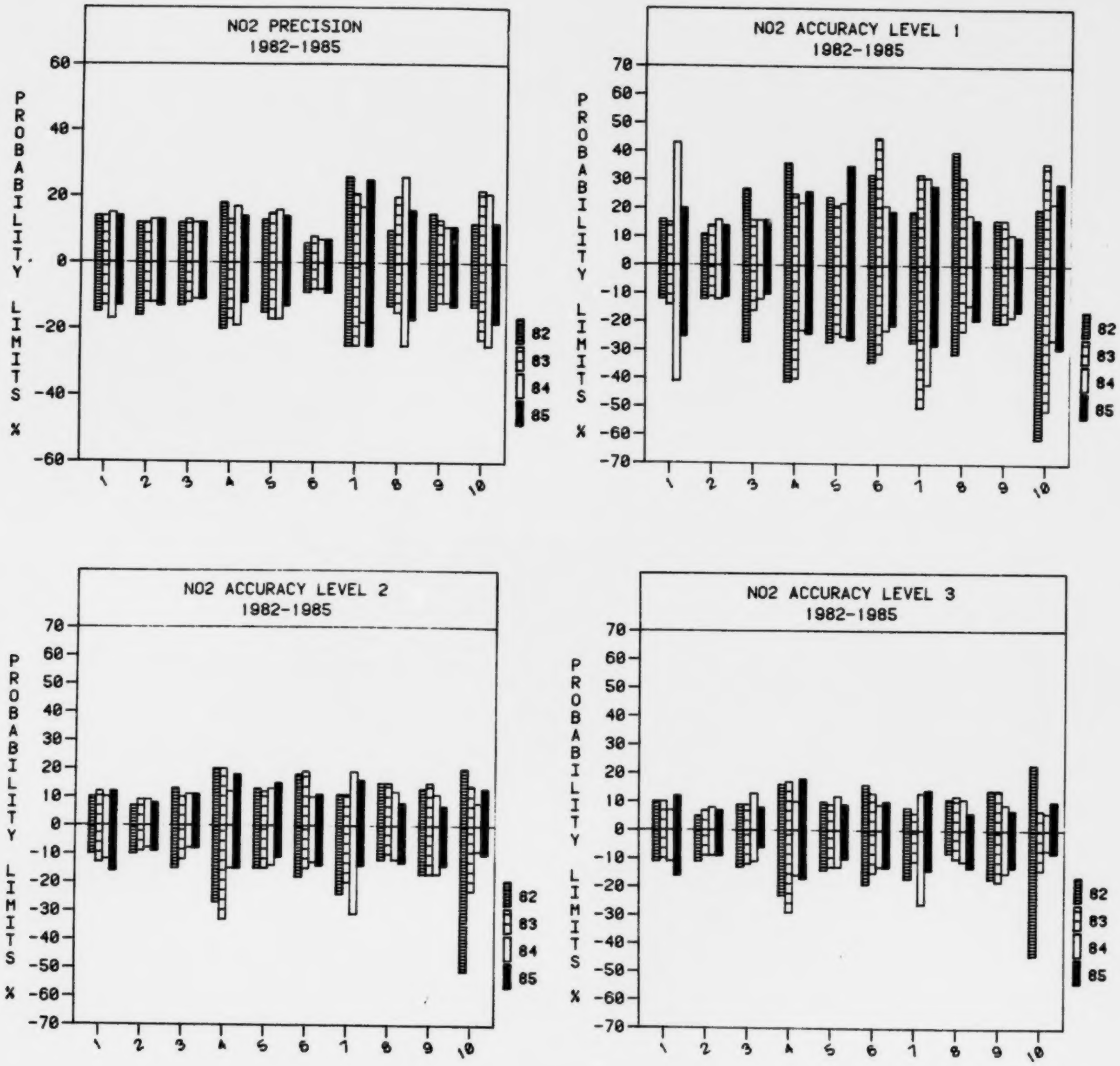

Figure 5. Continuous NO_2 precision and accuracy by region for 1982 through 1985.

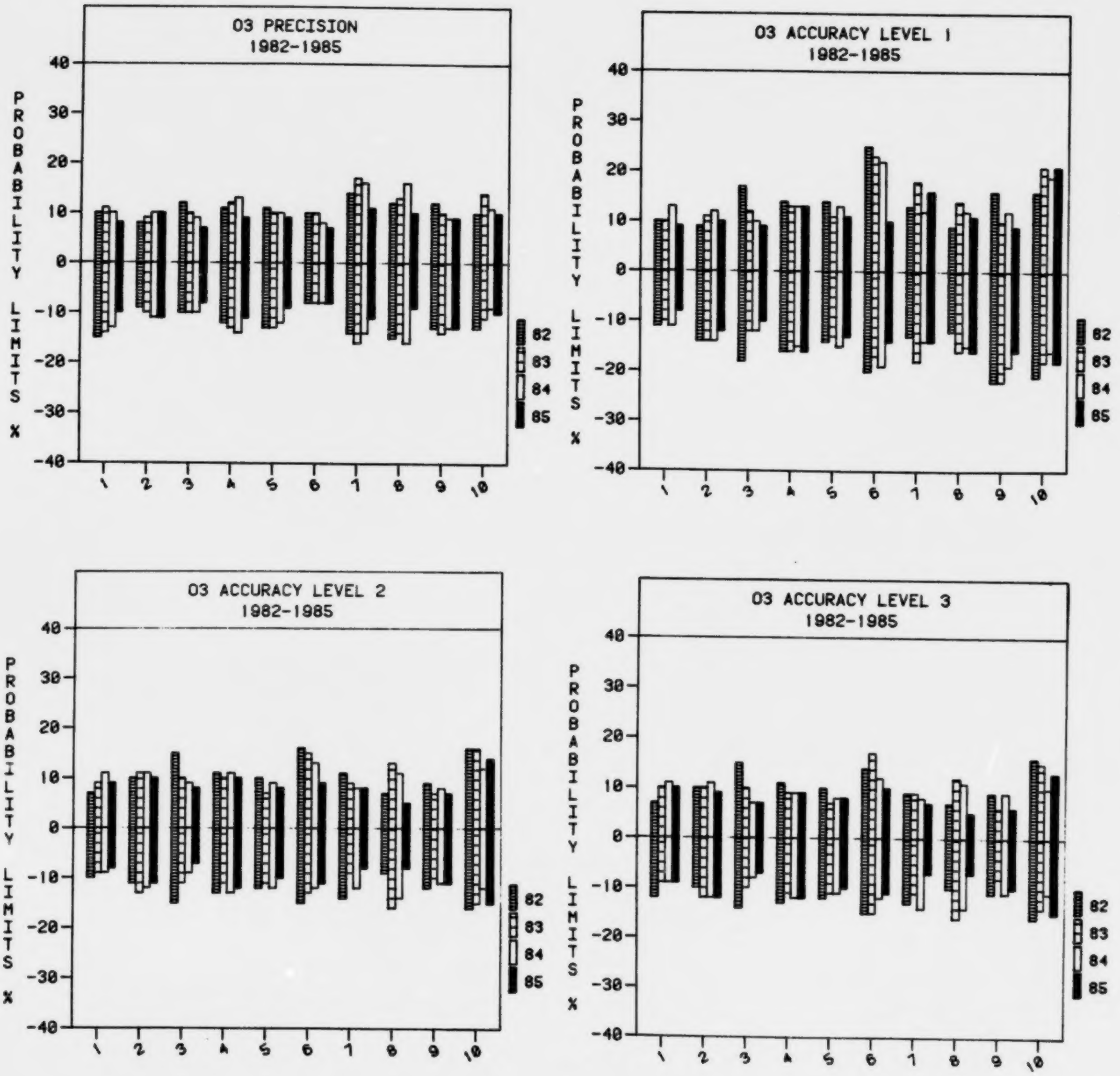

Figure 6. Ozone precision and accuracy by region for 1982 through 1985.

EPA, EMSL, Research Triangle Park, NC
EPA, Region II, Edison, NJ
EPA, Region V, Chicago, IL
EPA, Region VI, Houston, TX
EPA, Region VIII, Denver, CO
California Air Resources Board, Sacremento, CA

and which are being used as calibration reference sources throughout the nation. Region X, however, was worse at all levels of accuracy and indicated considerable bias for the precision checks.

TSP (Figure 7)

Three regions -- II, VII and IX -- did worse in precision and in accuracy in 1985 than in 1984. Only one region -- VI -- was better in accuracy.

Pb (Figure 8)

Five regions -- II, III, VII, VIII and X -- showed improvement in precision. However, Regions VII and X were worse in accuracy in 1985 than in 1984.

SO_2 (manual) (Figure 9)

Only two regions continue to use the manual method for SO_2. Of these, Region IX showed improvement in precision but no change in accuracy. Region IV was worse in 1985 than in 1984 for precision and all levels of accuracy.

NO_2 (manual) (Figure 10)

Of the five regions still using this method, Region VI showed either significant improvement or no change for precision and accuracy. Regions IV and VII were worse in precision.

Ranking Comparisons of Regions

Ranking comparisons were made to determine the regions and pollutant-measurement methods which improved most from 1984 to 1985. Improvement was indicated by a reduction in the spread of the probability limits from 1984 to 1985. Considering all pollutant-measurement methods and precision and accuracy results, the following lists the regions in order of improvement.

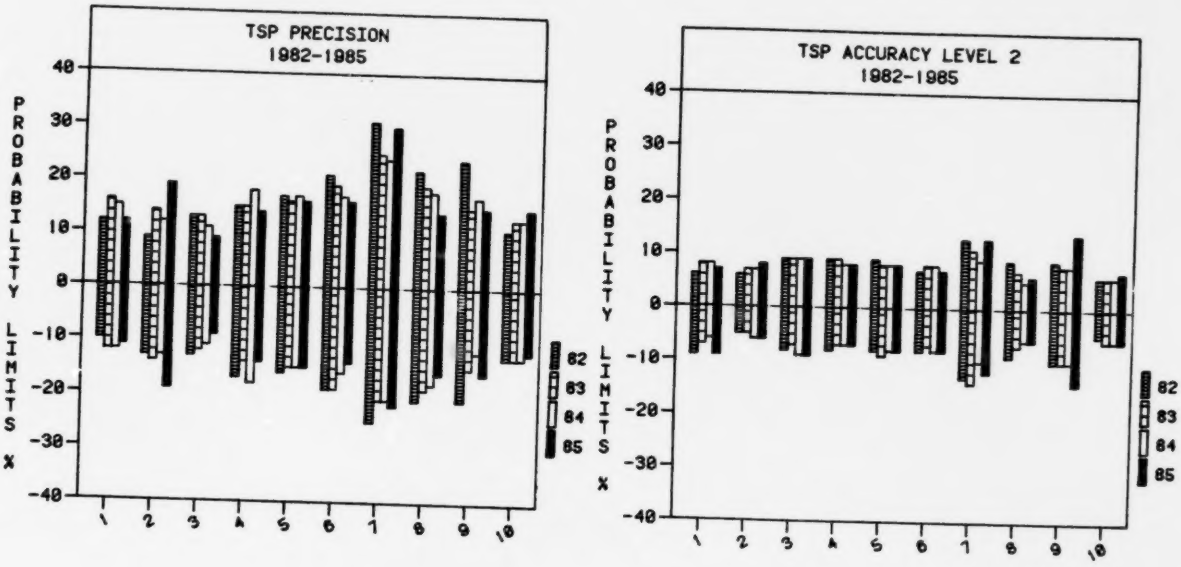

Figure 7. TSP precision and accuracy by region for 1982 through 1985.

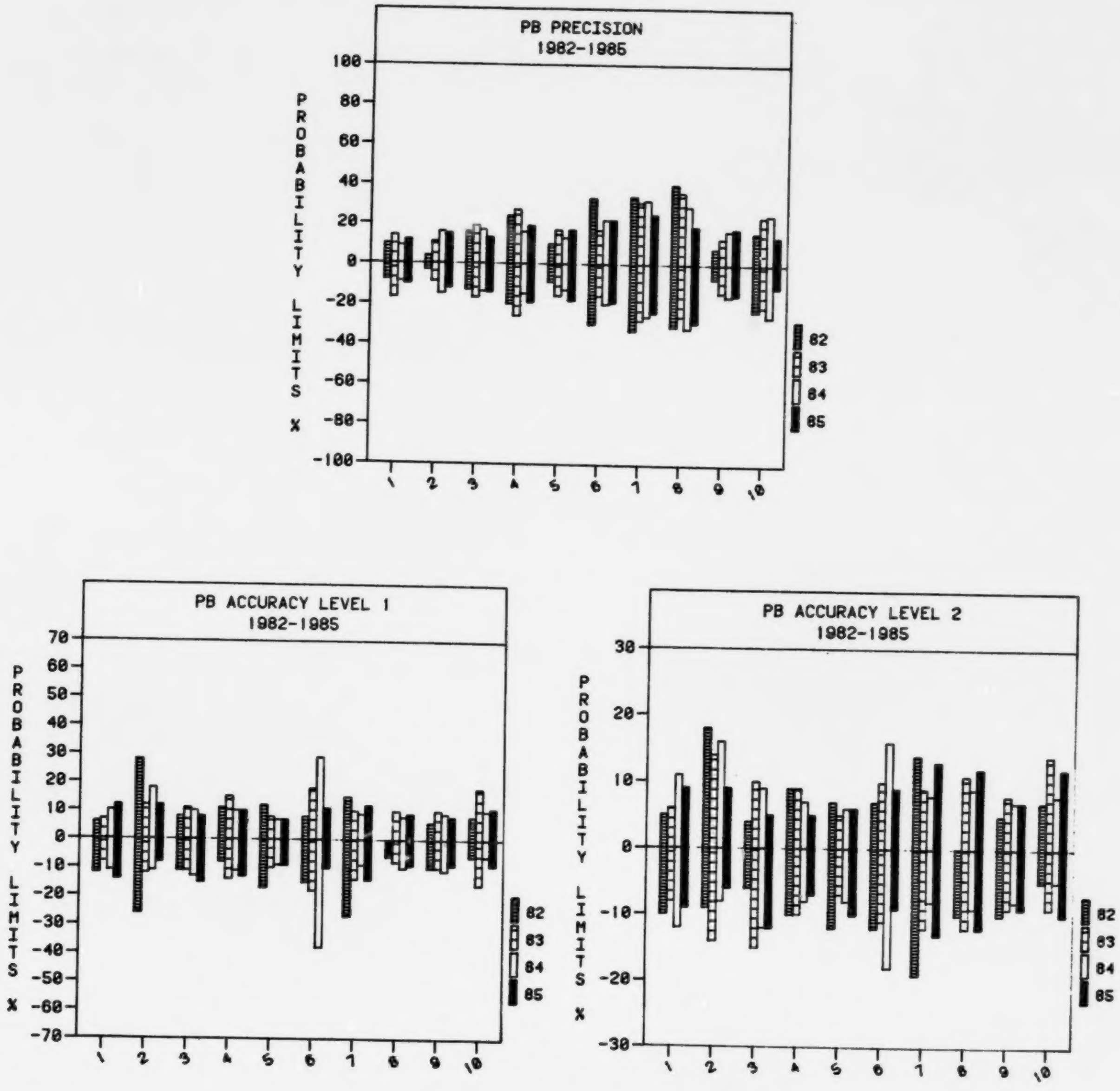

Figure 8. Lead precision and accuracy by region for 1982 through 1985.

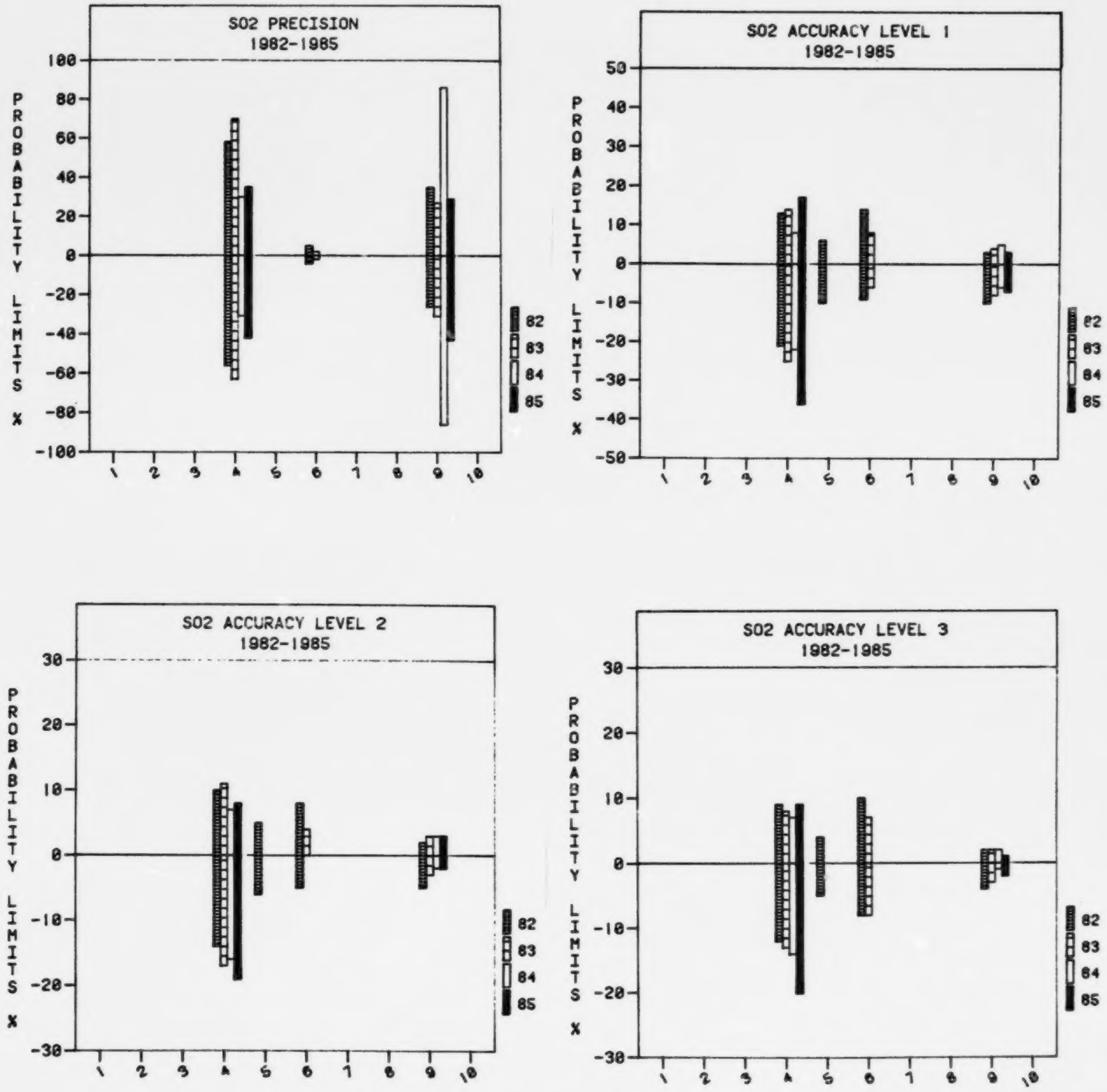

Figure 9. Manual SO_2 precision and accuracy by region for 1982 through 1985.

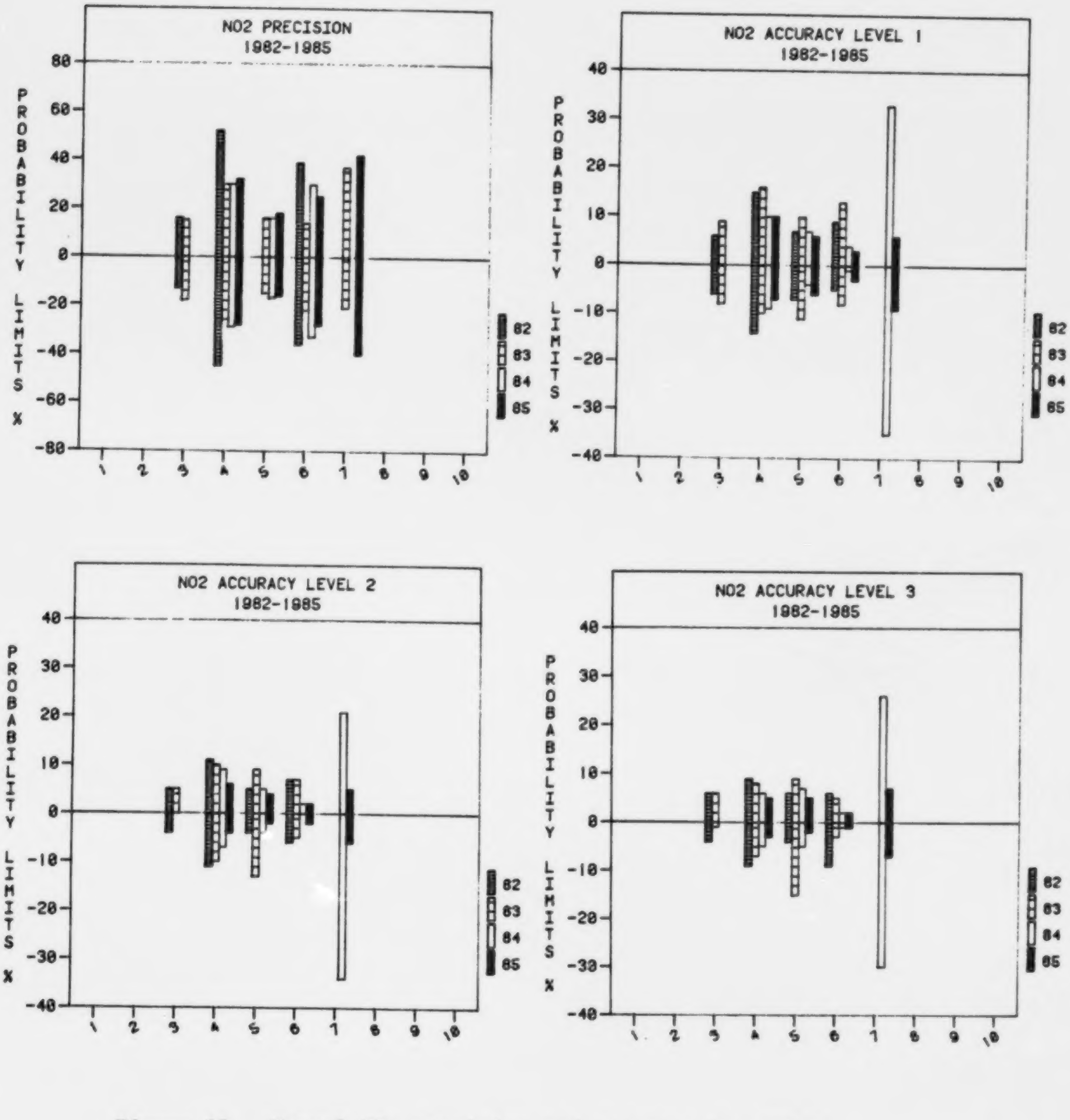

Figure 10. Manual NO_2 precision and accuracy by region for 1982 through 1985.

Regions	Relative Score	
III, IX	9	Most improved
VII	8	
I, VI, VIII	7	
V	1	
IV	0	No change
II	-1	
X	-4	Worse than 1984

The most improved measurement method was determined by combining the rankings across regions and across precision and accuracy.

Pollutant	Relative Score	
Ozone	25	Most improved
CO	8	
SO_2	7	
NO_2	4	
NO_2 (manual)	3	
Pb	1	
SO_2 (manual)	-2	
TSP	-3	Least improved

General comparisons among regions can be made on several different bases. One basis is that of improvement, as shown by the above analysis. However, comparisons of improvement may not be fair to those regions which already demonstrate a history of good precision and accuracy -- they have little further room for improvement and may be approaching the inherent limitations or capabilities of the measurement methods. On the contrary, the regions that have shown poorer precision and accuracy have more room for improvement.

A better measure for comparison may be the magnitude of the accuracy assessments. Not considering any significant biases reflected by the mean of the upper and lower probability limits, the spread of the limits would be a good measure of how well the precision and accuracy of measurement systems are being controlled. The following analysis using the spread of the limits provide this additional and perhaps better way of making general comparisons across regions.

Ranking comparisons were also made to determine the regions and pollutant-measurememt methods which were best based on the widths of the probability limits for 1985. These comparisons were made separately for the continuous methods and manual methods and also separately for precision and accuracy. The rankings were:

Continuous Methods

Precision			Accuracy		
Region	Rank		Region	Rank	
VI	1	Best	III	1	Best
III, IV	2.5		II	2	
I	4		VIII, IX	3.5	
II	5		I	5	
V, X	6.5		X	6	
IX	8		VII	7	
VIII	9		V, VI	8.5	
VII	10	Worst	IV	10	Worst

Manual Methods (TSP and Pb Only)

Precision			Accuracy		
Region	Rank		Region	Rank	
I, III	1.5	Best	V	1	Best
X	3		II	2	
IX	4		IV	3	
II	5		VI, VIII, X	5	
IV, V	6.5		III	7	
VI	8		I	8	
VIII	9		IX	9	
VII	10	Worst	VII	10	Worst

The above rankings are similar to those for previous years.

It could be said that the comparisons of improvement relate to measures of progress, whereas the comparisons of variabilities, i.e., the spread of the limits, relate to measures of achievement.

General

Taking into account the minor trends of improvement, the general consistency from year to year of the differences of results among pollutants and among levels of the same pollutants on a national basis, and among regions for given pollutants, is truly surprising. These appreciable differences which persist from year to year strongly indicate that whatever forces or causal factors are in action in each region and in each pollutant measurement system are persistent over the years. These significant differences between regions should be investigated to identify the major causal factors, since some regions consistently produce more precise and accurate data than other regions.

Further, each region should evaluate the differences among the states and reporting organizations in a similar graphical manner as shown by Figures 3 through 10 and the ranking comparisons of improvement and accomplishment as shown above. Then investigations should be conducted to determine why some states or reporting organizations produce better precision and accuracy than others. Appropriate corrective actions should then be taken to improve the precision and accuracy of the reporting organizations having the worst results.

SECTION 4

RESULTS BY REPORTING ORGANIZATIONS

Table 11 shows the total number of Reporting Organizations reporting data to EMSL in 1985. By comparing the numbers between Tables 9 and 11, one can see the extra effort exerted by some of the State and local agencies to provide quality assurance information in cases where they have no SLAMS or NAMS sites. There are an additional 2 reporting organizations for continuous SO_2, 3 for continuous NO_2, 1 for TSP, 4 for Pb, 4 for manual SO_2 and 5 for manual NO_2. The number of reporting organizations reporting data for CO is 3 less than the number which should have reported data. Apparently, these additional sites are special purpose monitoring sites or additional local sites not in the SLAMS/NAMS network.

TABLE 11. NUMBER OF REPORTING ORGANIZATIONS HAVING DATA IN THE PARS MASTER FILE FOR THE YEAR 1985

	Automated pollutants				Manual pollutants			
Region	CO C42101	SO_2 C42401	NO_2 C42602	O_3 C44201	TSP I11101	Pb I12128	SO_2 I42401	NO_2 I41602
I	6	6	4	6	6	5	0	0
II	3	3	2	2	4	3	0	0
III	10	12	11	12	16	9	0	0
IV	21	28	14	30	36	15	5	3
V	20	26	13	25	30	17	0	1
VI	10	11	10	10	14	11	1	1
VII	11	9	5	10	14	8	0	1
VIII	5	4	3	3	9	3	0	0
IX	8	7	7	8	10	7	1	0
X	4	3	2	2	4	4	0	0
Nation	98	109	71	108	143	82	7	6

Appendix D shows the annual combined upper and lower probability limits for each reporting organization. Each reporting organization can compare their values with those of other reporting organizations and with the regional and national values. Also given for each reporting organization are the following informational items:

Continuous methods	Manual methods
No. of SLAMS and NAMS sites	No. of SLAMS and NAMS sites
No. of analyzers	No. of samplers
No. of precision checks	No. of collocated sites
No. of accuracy audits	No. of accuracy audits

Any user of monitoring data from some specific site and time period should obtain, from the local air monitoring agency, the precision and accuracy data for the specific sites and time periods involved.

SECTION 5

FURTHER EVALUATION OF PARS DATA

Some interesting comparisons can be made by considering the corresponding national averages of Tables 6 and 7 and the 50-percentile values of the probability limits of Table 8. Table 12 compares these limits by considering the spread, or range, of the limits.

TABLE 12. COMPARISON OF THE 50-PERCENTILE FREQUENCY DISTRIBUTION VALUES WITH THE NATIONAL LIMIT VALUES FOR 1985

		National values			50-percentile values		
		Lower limit	Upper limit	Range	Lower limit	Upper limit	Range
Manual methods							
TSP	Precision	-15	16	31	-10	10	20
	Accuracy*	- 8	8	16	- 5	6	11
Pb	Precision	-18	19	37	-10	10	20
	Accuracy	-10	8	18	- 5	3	8
NO_2	Precision	-27	29	56	-16	17	33
	Accuracy	- 3	5	8	- 3	4	7
SO_2	Precision	-42	35	77	-33	29	62
	Accuracy	-18	9	27	- 9	5	14
Continuous methods							
CO	Precision	- 9	9	18	- 6	6	12
	Accuracy	- 8	8	16	- 5	5	10
O_3	Precision	-10	9	19	- 8	7	15
	Accuracy	-11	9	20	- 7	5	12
NO_2	Precision	-12	12	24	-10	10	20
	Accuracy	-13	12	25	- 8	7	15
SO_2	Precision	- 9	7	16	-11	7	18
	Accuracy	-12	12	24	- 8	8	16

*All accuracy values for all pollutants are for Level 2.

MANUAL METHODS

For the manual methods, in all cases the spreads (ranges) of the probability limits are considerably greater for precision than for accuracy. These differences are consistent for both the National averages and the 50-percentile values. These same relationships also existed for all previous years. This means that the short-term within-sampler variability (precision) is larger than the variability of accuracy which would normally include variations between, or among, samplers as well as imprecision within samplers. This may seem contradictory at first, but giving consideration to exactly how the results are obtained and what the results represent will provide a rational explanation.

TSP. In the case of TSP, the precision results are obtained from collocated sampler data. They include variability from the sample collection process, the analytical filter weighing process, the filter handling and conditioning process, and also the flow rate measurement process; whereas the accuracy audit is a check only on the flow rate measurement. Further, the collocated sampler results are obtained at all ambient concentrations above 1 $\mu g/m^3$, the detection limit for the method. At low concentration levels the relative variability is greater than at higher concentrations. The combined effects of these two causes explain the wider limits for precision.

Manual SO_2 and NO_2. Similar to the TSP data, the precision results are obtained from collocated sampler data. They include variability from the flow measurement, absorbing solutions, sampling, sample handling, and storage effects (stability) of the samples as well as the laboratory analytical portion of the method; whereas the accuracy audit is a check only on the laboratory analytical portion of the method. Further, the collocated sampler results are obtained at all ambient concentrations above the detection limits of the methods. Many of these concentrations are below the concentrations of the accuracy audits. At lower concentrations, the relative variability is greater than at higher concentrations.

As noted from Table 12, these differences are considerable, indicating that only a small portion of the variability results from the laboratory analytical part of the method. A very considerable amount of variability of the method is attributed to other portions of the measurement process. The very wide limits of uncertainty attributed only to the imprecision of these methods strongly emphasizes that the manual methods should be replaced by the continuous anlayzers. Alternatively, if any reliance is to be placed on individual daily data from the manual methods, all of the various portions of the measurement processes must be much more closely controlled, if possible.

Pb. The precision estimates for Pb are obtained from the analysis of duplicate strips from the same hi-vol filter. Consequently, actual variability of Pb content across the length of the filter, filter handling (with possible loss of particulate), variation in cutting filter strips, and the extraction of real-world particulate are involved in addition to the chemical analytical portion of the method. The accuracy audit data are obtained from the chemical analysis of strips to which known amounts of water-soluble Pb salts have been added and thus do not involve the other portions of the measurement process, nor do they involve real-world particulates.

Further, similar to the other manual methods (TSP, NO_2, and SO_2), the precision estimates are obtained at all concentrations above the detection limit. Many of these concentrations are less than those of the accuracy audits. At lower concentrations, the relative variability is expected to be greater than at higher concentrations.

Manual Methods (General). To make valid comparisons of the precision and accuracy data, such comparisons should be made at the same concentration levels. Only then will it be possible to determine whether the larger variabilities of the precision estimates are due to differences in concentration level or to the larger scope of the measurement system involved.

Such comparison studies can be accomplished when the raw concentration data are obtained from the State and local agencies for each precision and accuracy check as specified by the proposed regulation revisions to Appendix A of 40 CFR, Part 58 promulgated March 19, 1986. Now only the reporting organizations could perform such studies, since only they have the raw data available.

The estimation of the magnitude of the contributions of the various sources of variability to the total measurement processes could also be systematically studied in specially designed experiments.

CO, SO_2, NO_2, O_3 (Continuous Methods). The national values for precision for the continuous methods are nearly the same as the accuracy values at level 2. For these continuous measurement methods, the precision assessments reflect the within-instrument variability obtained from bi-weekly checks at relatively low concentrations, namely

8 - 10 ppm for CO
and .08 -.10 ppm for SO_2, NO_2, and O_3.

In comparison, the accuracy audits include between-instrument variability as well as imprecision, but are conducted at higher (level 2) concentrations.

15 - 20 ppm for CO
.15 -.20 ppm for SO_2, NO_2, and O_3.

Thus, the added between-instrument variability for the level 2 accuracy audit is almost exactly offset by the improved percentage within-instrument variability for the precision.

Level 1 accuracy audits are conducted at concentrations of

.03 -.08 for CO
3 - 8 for SO_2, NO_2, and O_3.

At Level 1, concentrations less than those for the precision checks, the probability limits for accuracy are wider than for precision. (See Table 7.)

COMPARISON OF NATIONAL LIMIT VALUES AND 50-PERCENTILE VALUES

With reference again to Table 12, in all cases the spreads (ranges) of the national values for both precision and accuracy are greater than for the corresponding 50-percentile values. For the continuous SO_2 method the ranges of the national values and the 50-percentile values are nearly the same for 1985. For all previous years the ranges for the national values were wider than for the 50-percentile values. There are two reasons why the spreads of the national values are much wider than the 50-percentile values. First, the presence of significant differences between quarters within reporting organizations, between reporting organizations within states, between states within regions, and between regions cause some increase in the total variability over and above that which would be obtained from only random variability. Second, the national values are unduly influenced by extreme or outlier values. If there were no significant differences and no outlier values, the 50-percentile values should closely agree with the national values.

An evaluation of the shape of the distributions does in fact show that the distributions are not normal due to an excessive number of extreme values (i.e., values in the tails of the distribution).

All of the distributions of the upper and lower probability limits are generally symmetric about zero. The only exception is for the SO_2 methods. For prior years the accuracy audits for the manual method and the precision and accuracy audits for the continuous methods were biased negatively. For 1985, the accuracy audits for the manual method is still biased negatively from 4 to 9 percent. And, the precision checks for the continuous method is biased negatively from 2 to 4 percent. However, the accuracy results for the continuous method are unbiased. A possible explanation for the negative bias for precision is that the relatively low concentrations of SO_2 (0.08 0.10 ppm) in cylinders specially prepared for precision checks may degrade after preparation. These biases for SO_2 were observed previously in the 1981, 1982, and 1983 data and seem to be consistent in magnitude and direction. These consistent biases should be investigated and corrected, if possible.

A review of Table 8 clearly shows the large variability of precision data for the manual methods and, in particular, the presence of many extreme values for the SO_2 and NO_2 methods. Table 8 and Figure 2 show more variability of the accuracy audit results from the continuous SO_2 and NO_2 methods than for CO and O_3.

Based on the percentiles of Table 8, quarterly probability limit values which exceed those listed in Table 13 should be considered excessive or outlier values and should initiate immediate investigation to determine and, hopefully, correct the cause of such excessive values. The values given in Table 13 are slightly tighter in some cases than the corresponding values given in the report for the 1984 data.

TABLE 13. VALUES OF QUARTERLY PROBABILITY LIMITS CONSIDERED AS EXCESSIVE BASED ON 1985 DATA

		Accuracy limits		
	Precision limits	Level 1	Level 2	Level 3
Manual methods				
TSP	± 26	---	± 15	---
Pb	± 35	± 20	± 15	---
NO_2	± 50	± 13	± 10	± 9
SO_2	± 70	± 21	± 18	± 15
Continuous methods				
CO	± 15	± 25	± 17	± 15
O_3	± 17	± 25	± 18	± 17
NO_2	± 27	± 44	± 23	± 20
SO_2	± 20	± 28	± 23	± 22

SECTION 6

COMPARISON OF RESULTS FROM THE PARS AND THE PA AUDIT PROGRAM

A general comparison between the accuracy data of the PARS program and the Performance Audit (PA) data is included in this report. The Performance Audit data are the results of an independent check conducted by the Quality Assurance Division (QAD) of the EMSL under the National Performance Audit Program (NPAP).

In the NPAP, specially prepared audit samples or devices are sent from QAD to the participating ambient air monitoring agencies. The samples or devices are carefully and accurately assessed by EMSL utilizing NBS Standard Reference Materials (SRM's) or standards. The monitoring agencies analyze or measure the samples or devices as unknowns or blinds and report their results to QAD for evaluation. Audit programs are conducted for the following pollutant measurements, using the materials indicated:

Measurement	Audit materials	Portion of measurement system audited
SO_2 (manual)	Freeze-dried sodium sulfite	Chemical analytical
NO_2 (manual)	Aqueous sodium nitrite	Chemical analytical
Pb	Filter strip with lead nitrate	Chemical analytical
TSP	Reference flow device	Flow
CO	Cylinders containing CO gas	Continuous instrument
SO_2	Cylinder containing SO_2 gas	Continuous instrument

The audit materials or devices are prepared at three to six different concentrations or flow levels. Separate reports on the evaluation of the PA data are published by EMSL.[6-9] Also, other reports[10,11] have dealt with the use of PA and PARS data.

As indicated above, the NPAP does not yet include an audit for the ozone or continuous NO_2 methods. Therefore, no comparisons of the NPAP or PA data with the PARS data are possible for those pollutants.

Since precision assessments are not made in the PA program, only accuracy can be compared across the PARS and the PA programs. For the purpose of this report, the results from PARS and the PA system are compared at approximately the same levels by matching laboratories and reporting organizations. (See Appendix E for a more detailed discussion of the problems involved in comparing the PARS and PA data. Since the PARS data are presented with outliers, the same approach was taken with the audit data. Knowledge of the past audit data reports, however, indicates that the presence of outliers may make a significant difference in the audit results for some agencies.

Comparisons of the national values of the probability limits (Table 14) exhibit fairly good agreement between the results of the two programs. Variations due to many sources of error for both data sets are averaged together to obtain the national values, thereby masking any correlations which may have existed for the results of individual agencies. There is considerable variation between the results of the two programs when comparisons are made on Regional and reporting organization bases. Lack of better agreement results from several factors. First, the inclusion of outlier values in the PA and PARS data appears to have introduced some excessive distortion of general trends. Second, the concentration levels for the two systems do not coincide exactly at each of the audit levels. Third, the PA data are the results of independent external audits, while the PARS accuracy data are based on the results of independent internal audits. The expected effects of the last-mentioned factor would cause the spread of the limits for the PA to be wider than that for the PARS. Examination of the results (see Table 14) confirm these expectations. The PA data for 1985 are generally better than the corresponding data for 1984.

TABLE 14. SUMMARY COMPARISON OF EMSL PERFORMANCE AUDITS (PA) vs. PARS ACCURACY AUDIT DATA FOR YEAR 1985

		National values 95% probability limits (%)					
		Level 1		Level 2		Level 3	
Pollutant	Audits	Lower	Upper	Lower	Upper	Lower	Upper
CO							
PA	388	-14	10	-10	9	- 8	9
PARS	667	-13	13	- 8	8	- 8	7
SO_2							
PA	756	-20	26	-18	22	-17	20
PARS	1326	-17	14	-13	12	-13	12
TSP							
PA	3772			-10	12		
PARS	5928			- 8	8		
Pb							
PA	432	-16	16	-15	10		
PARS	777	-12	9	- 9	7		
SO_2 (manual)							
PA	15	-24	25	- 9	22	- 1	9
PARS	55	-21	20	-10	12	-10	11
NO_2 (manual)							
PA	15	0	3	- 0	7	- 2	4
PARS	40	-20	20	-10	15	-14	19

Comparisons of the 95 percent probability limits for the PA and the PARS results by Region are shown in Figures 11a through f for selected concentration levels. The figures show considerable variation among Regions.

CO. (Figure 11a)

The width of the PARS probability limits for level 3 exceed those for PA for six of the ten Regions. The PARS limits are considerably wider for Region VII than for other Regions. For previous years, the PA limits have generally been wider than the PARS limits.

TSP. (Figure 11b)

For seven Regions, the width of the probability limits for PARS is less than for PA. This may be explained by the fact that within each reporting organization the flow rate checks are not as completely independent from their internal standards as are the PA audits. Regions II and IX have more variability of PA audit data than other Regions.

NO_2 (manual). (Figure 11c)

The variability for PARS for Region IV is considerably larger than for 1984

SO_2 (manual). (Figure 11d)

Region IV PA data is about as variable for 1985 as for 1984.

Pb. (Figure 11e)

There is considerable variation in the results from Region to Region. However, for most Regions, the PARS variability is considerably less than for PA. This may be explained by the fact that the local independently-prepared standards for PARS have close traceability to the materials used for calibration, whereas the standards for PA, since they are prepared at EMSL/RTP, are more completely independent.

Regions VI and VIII results have much more variability for PA than the other Regions, indicating a need for investigations to determine the major causes and appropriate corrective actions.

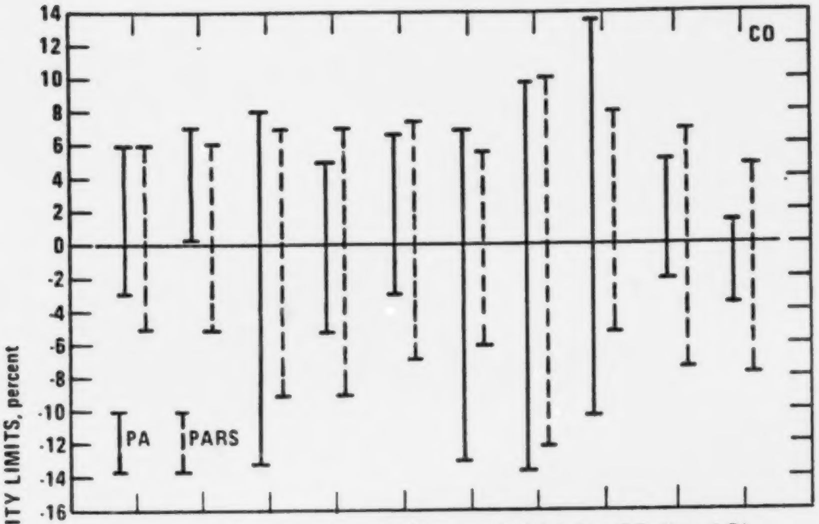

Figure 11a. Comparison of PA and PARS for CO (level 3).

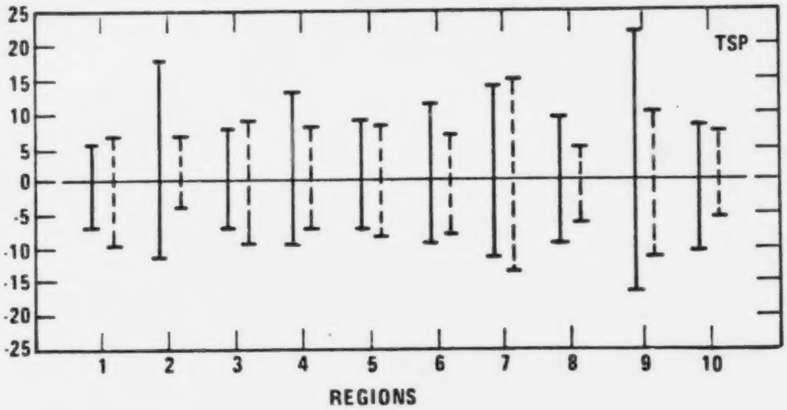

Figure 11b. Comparison of PA and PARS for TSP (level 2).

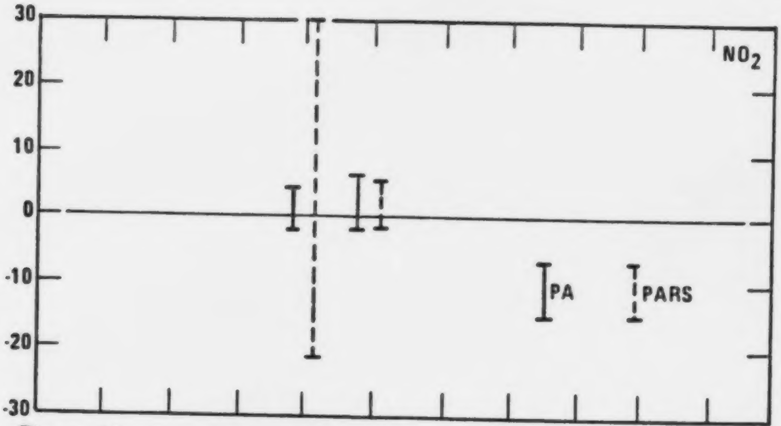

Figure 11c. Comparison of PA and PARS for manual NO_2 (level 3).

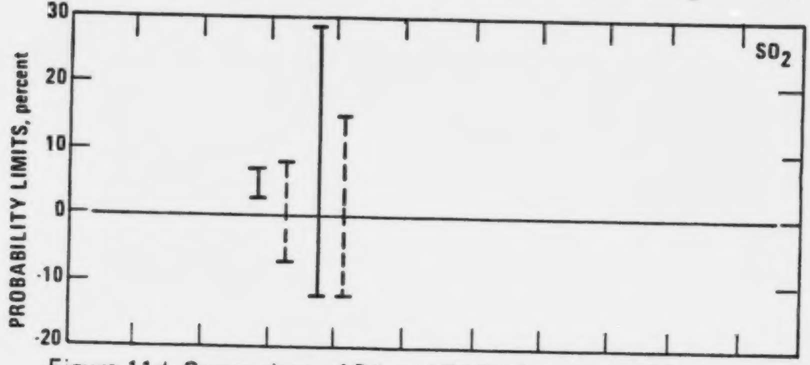

Figure 11d. Comparison of PA and PARS for manual SO_2 (level 2).

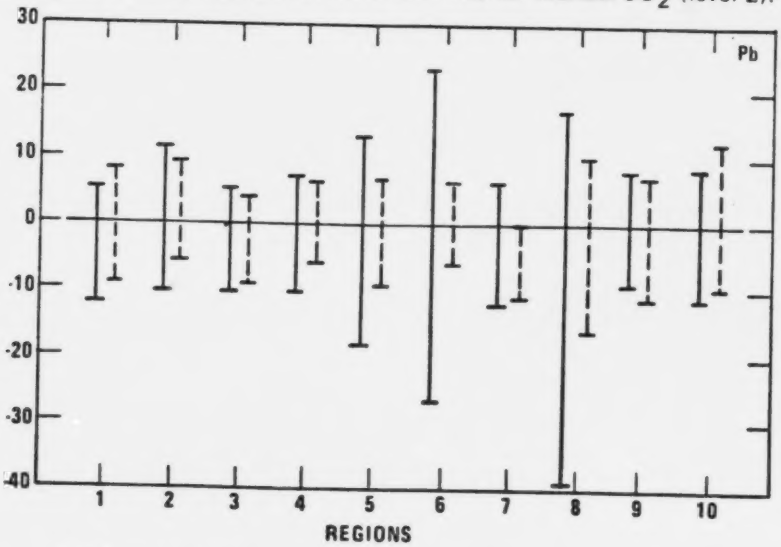

Figure 11e. Comparison of PA and PARS for Pb (level 2).

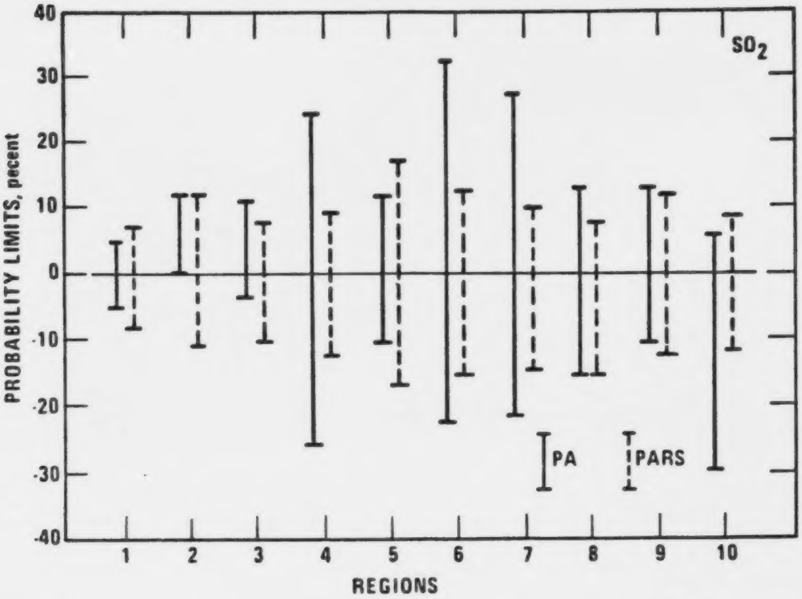

Figure 11f. Comparison of PA and PARS for continuous SO$_2$ (level 3).

SO_2 (Continuous). (Figure 11f)

Figure 11f shows the available comparisons of the PA and PARS data for the continuous SO_2 method.

Regions IV, VI and VII show considerably more variation of PA results than other Regions. Except for Region X, the data do not show the consistent negative biases evident for previous years.

National Comparison

Figure 12 gives the available PA and PARS comparisons on a national basis for all levels for each pollutant method. For the continuous SO_2 method, the PA limits are consistently wider than for PARS. For CO, they are nearly the same.

For the manual TSP and Pb methods, the PA limits are consistently wider than the PARS limits. The results for the manual SO_2 and NO_2 methods are somewhat inconsistent, partly because of the limited amount of data for comparison.

Missing PA and PARS Comparisons.

Comparsion of the results from PARS and PA are, of course, possible only when the data are available from both systems for paired reporting organization-laboratory combinations. Paired data were not available for 140 comparisons. Of these, data was not available because of missing data from the PARS for 20 comparisons:

Region	State	Reporting organization	Laboratory number	Pollutant(s)
II	VI	55001	310001	SO_2,* TSP**
IV	FL	10018	432002	SO_2*
	NC	34003	418006	SO_2
	TN	44005	417001	CO
V	OH	36014	427008	CO
VII	MO	26003	438003	Pb**
	NE	28003	435002	SO_2
VIII	AZ	03200	447001	SO_2
IX	CA	05036	445003	Pb**
	HI	12120	348001	CO, TSP, SO_2
	NV	29100	346001	CO**
	NV	29200	446001	CO, TSP
	NV	29300	446002	Pb*
	GU	54100	349001	SO_2,* TSP,** SO_2 (manual)*

*Also missing for 1984
**Also missing for 1983 and 1984

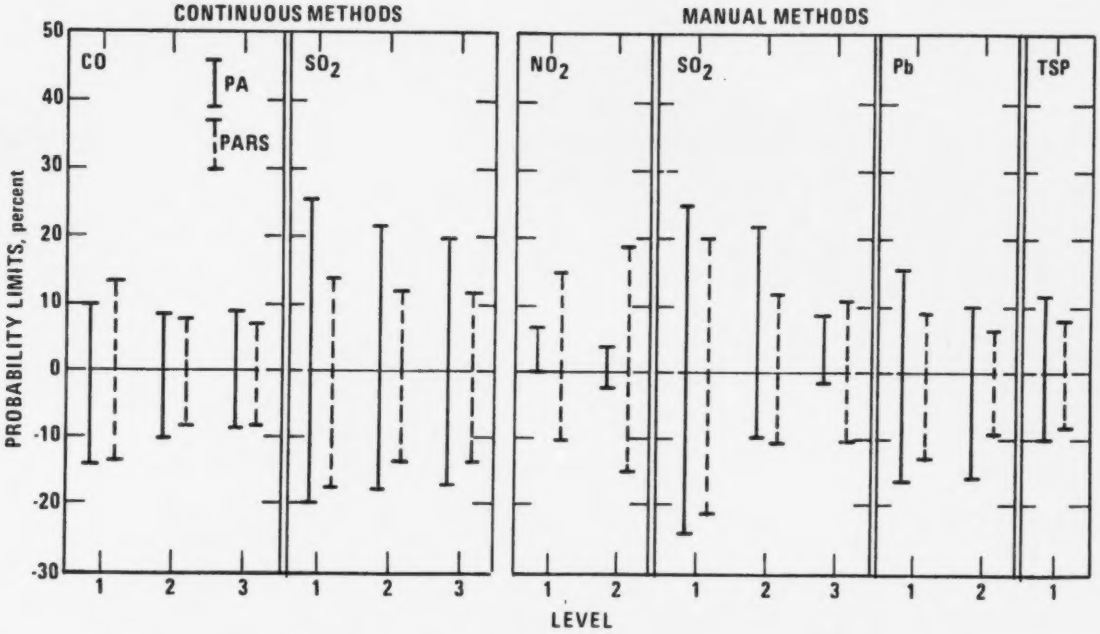

Figure 12. Comparison of PA and PARS, national values, 1985.

Lack of laboratory participation in the National Performance Audit Program is the reason there is no paired data available for 135 cases compared to 89 for 1984. In these cases, the laboratories (reporting organization) did not comply with the requirements of the federal regulations. In some of these cases, the laboratory requested the audit samples but did not report any results. A listing of missing PA audit data follows:

Region	State	Reporting organization	Laboratory number	Pollutant
I	MA	22001	304001	CO
	NH	30001	302001	CO
II	NJ	31001	308001	TSP
	VI	55001	310001	SO$_2$*
III	DC	09001	312100	CO, TSP, Pb**
	MD	21001	312001	TSP
	MD	21003	412004	SO$_2$*
	PA	39002	411002	CO, Pb
	PA	39003	411001	CO, Pb
	VA	48002	415005	TSP
	WV	50002	314002	CO**
IV	AL	01012	419001	SO$_2$*
	AL	01013	419003	TSP,** SO$_2$*
	AL	01016	------	TSP
	FL	10001	323005	CO,* SO$_2$
	FL	10003	323004	CO*
	FL	10004	323008	TSP
	FL	10007	323010	SO$_2$
	FL	10011	423003	CO, Pb
	FL	10012	423004	Pb, NO$_2$ (manual)
	FL	10014	423005	TSP, SO$_2$ (manual)
	FL	10015	423005	SO$_2$
	FL	10017	423001	CO,*, Pb,
	FL	10018	423002	SO$_2$,* CO,* Pb
	FL	10020	------	CO, TSP, SO$_2$
	NC	34003	418006	SO$_2$
	TN	44001	317001	Pb
	TN	44002	417004	SO$_2$,* CO, Pb
	TN	44003	417003	CO,* Pb
	TN	44004	417002	CO*
	TN	44005	417001	TSP
V	IL	14001	328001	CO, Pb
	IN	15005	429005	SO$_2$*
	IN	15008	429004	Pb*
	IN	15009	429008	TSP*
	IN	15010	429011	TSP,** Pb, SO$_2$
	IN	15100	329002	CO,* Pb*

(continued)

Region	State	Reporting organization	Laboratory number	Pollutant
V	MI	23002	426001	CO, Pb
	OH	36001	327001	CO, TSP
	OH	36005	327006	Pb
	OH	36006	427001	Pb**
	OH	36007	427002	CO
	OH	36008	427003	CO, Pb**
	OH	36009	427004	CO, TSP, Pb**
	OH	36010	427005	CO, Pb**
	OH	36014	427008	CO*
VI	AR	04002	332001	Pb
	LA	19001	334001	Pb,** CO
	NM	32002	430001	TSP
	OK	37101	331002	CO
	OK	37102	431001	CO,** Pb
	OK	37103	431002	TSP,** CO, PB
	TX	45001	333001	Pb,** CO
	TX	45002	433002	CO, Pb
	TX	45003	433002	CO, Pb
	TX	45004	433004	TSP**
	TX	45007	433010	TSP
VII	IA	16001	436001	CO
	IA	16002	436002	CO
	MO	26002	438004	CO, Pb
	MO	26003	438003	CO, TSP, Pb
	MO	26004	438002	TSP**
	MO	26005	438005	CO
	MO	26006	------	TSP, CO
	MO	26007	------	TSP, CO
	NE	28001	335001	TSP
VIII	CO	06001	344002	Pb,** TSP**
	MT	27002	439001	CO*
	MT	27004	439003	CO
IX	AZ	03200	447001	SO_2,* CO Pb
	AZ	03300	447002	SO_2,* CO, Pb
	CA	05004	445001	CO, Pb
	CA	05036	445003	Pb*
	CA	05061	445002	SO_2*
	HI	12120	348001	CO,** SO_2, Pb SO_2 (manual)
	NV	29100	346001	TSP
	NV	29200	446001	CO, TSP
	NV	29300	446002	TSP,** CO,* Pb*
	GU	54100	349001	TSP,** SO_2* SO_2 (manual)
X	ID	13001	354001	SO_2*
	WA	49001	352001	CO, Pb

*Also missing for 1984
**Also missing for 1983 and 1984

In 15 cases, data were unavailable from both PARS and PA:

Region	State	Reporting Organization	Laboratory number	Pollutant
II	VI	55001	310001	SO_2*
IV	FL	10018	432002	SO_2*
	NC	34003	418006	SO_2
V	OH	36014	427008	CO
VII	MO	26003	438003	Pb**
VIII	AZ	03200	447001	SO_2*
IX	CA	05036	445003	Pb**
	HI	12120	348001	CO, SO_2
	NV	29200	446001	CO, TSP
	NV	29300	446002	Pb*
	GU	54100	349001	TSP,** SO_2* SO_2 (manual)

*Also missing for 1984
**Also missing for 1983 and 1984

SECTION 7

CONCLUSIONS AND RECOMMENDATIONS

The results of PARS data for 1985 indicate some general improvement over the data for previous years. However, considerable differences exist among Regions and individual reporting organizations for most measurement methods. Investigations should be made by the Regions and the States to determine the causes of these significant differences.

The PA data for TSP and Pb show more variability than for PARS. These differences are presumably due to the fact that the external PA accuracy audits are more completely independent than the internal PARS accuracy audits. These differences have been consistent for past years except that in 1984 and 1985 the differences for continuous CO and SO_2 have been about the same for PA and PARS.

Further improvement in the data quality assessments, which are measures of the monitoring data quality, can be achieved only through continuing efforts of State and local agency personnel involved (first-hand) with the operation and quality control of their measurement systems. Regional QA Coordinators can also assist through their review of the operations and quality control practices across the States in their Regions.

Each Regional QA Coordinator should evaluate the PARS data from all the reporting organizations within his Region to identify those organizations having excessively large variations of probability limits. Investigation should be made to determine the causes and correct them to preclude future excessive deviations. Similarly, Regional QA Coordinators should review the operations of the reporting organizations having significantly better precision and accuracy results in order to identify specific procedures which should be uniformly used throughout the Region and the Nation to further improve the reliability of the monitoring data in the National Aerometric Data Base.

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APPENDIX A

GLOSSARY

State and Local Air Monitoring Stations (SLAMS) -- monitoring stations selected by the states and included in the State Implementation Plans. The stations and the plans are approved by the Regional Administrator. The purposes of the monitoring are to determine compliance to the National Ambient Air Quality Standards (NAAQS) and to determine background levels of the criteria pollutants.

National Air Monitoring Sites (NAMS) -- a subset of the SLAMS, selected by the states in collaboration with the Regional Offices and approved by the Administrator. The purpose of the sites is to monitor in the areas where pollution concentration and population exposure are expected to be highest in terms of the NAAQS. Although, in actuality the NAMS are a subset of SLAMS, the NAMS sites and the non-NAMS SLAMS sites are often referred to as two separate groups, the NAMS and SLAMS sites, respectively.

Reporting Organization -- a state, or subordinate organization within the state, that is responsible for a set of SLAMS stations, monitoring for the same pollutant and for which PARS data can be logically pooled (statistically combined). It is important to emphasize that a reporting organization is pollutant- and site-specific and is responsible for the sampling, calibration, analysis, data quality assessment, and reporting of the monitoring data for the specific pollutant. It is possible that a particular SLAMS station may belong to two different reporting organizations, but the likelihood of this occurring is small.

Precision (Continuous Analyzers) -- a measure of repeatability obtained from repeated measurements of a standard concentration in a gas cylinder and the values indicated by the analyzer. For SO_2, NO_2, and O_3 analyzers, the gas concentration used for the precision check must be between 0.08 and 0.10 ppm and for CO it must be between 8 and 10 ppm. The data from all biweekly analyzer checks for a given pollutant are combined, and 95% probability limit values are reported to EPA each quarter by each reporting organization. For this report, the quarterly values for 1985 were combined, and overall 95% probability limits were calculated for each reporting organization, for each Region, and for the nation, as described in Appendix B.

Precision (Manual Methods) -- a measure of repeatability for TSP, NO_2, and SO_2 manual methods (bubblers) determined by operating collocated samplers at selected sites. At each collocated site one sampler is designated as the "actual" sampler and the other as the "check" sampler, and the difference between the two samplers provides the precision estimate. For Pb, precision estimates are obtained by analyzing duplicate strips from a high volume filter sample collected at a site where high Pb concentrations exist. These precision checks are made from samples, usually taken every 6 days, and are reported quarterly. The data from the manual methods were calculated in a similar manner as the automated (continuous) analyzers.

Accuracy (Continuous Analyzers) -- the agreement between an analyzer measurement and a known audit standard concentration. Accuracy estimates are obtained at least once per year for each analyzer by introducing blind audit standards into the analyzer. The audit samples must span at least three concentration levels and, whenever possible, must be traceable to NBS or other authoritative reference. At least 25% of the analyzers in each reporting organization must be audited each quarter. The percentage difference for each audit concentration is determined, and the average for all analyzers checked within that quarter is calculated for each level. The standard deviation for each level is then used to calculate the 95% probability limits for the reporting organization, which in turn are submitted quarterly to EPA. These quarterly values were combined to determine the annual values presented here. They were calculated in the same manner as described earlier for precision.

Accuracy (Manual Methods) -- the agreement between an observed or measured value and a known or reference value. For NO_2 and SO_2 manual methods, the accuracy of the analytical portion of the method is assessed at three levels by the analysis of known audit materials. For Pb, the accuracy of the analytical portion of the method is assessed at two levels. For TSP, the flow rate (or air volume) portion of the method is assessed at the nominal flow rate.

Completeness -- the number of the precision and accuracy checks reported as compared to the number that should have been reported if all checks had been done in accordance with the regulations. This value, expressed as a percentage, is not corrected for instances where equipment failure prevented conducting the check, or for periods when monitoring data were invalidated.

National Ambient Air Audit Program (NAAAP) -- an external performance audit program conducted by EPA on State and local agency organizatons. Organizations operating SLAMS stations are required to participate in this program directed by the Environmental Monitoring Systems Laboratory (EMSL) of the EPA at Research Triangle Park, NC. In this program, blind audit materials prepared by EMSL are sent to participating laboratories. The laboratories analyze the samples and return the results to EMSL. Shortly after the audit is completed each participant receives a report that compares his performance to that of all other participants. The audit materials for the manual methods for SO_2, NO_2 and Pb are used to evaluate the accuracy of only the analytical laboratory portion of the method, and are as follows:

Method	Audit Materials
Manual SO_2	Freeze-dried Na_2SO_3
Manual NO_2	$NaNO_2$ solution
Pb	Filter strips spiked with Pb SO_4

The reference flow device used in the TSP sampler audit evaluates only the accuracy of the flow calibration. However, the CO and SO_2 continuous analyzer audits evaluate the entire measurement system. As explained above, the external NAAAP audits are conducted in essentially the same manner as the internal audits (accuracy checks) for the PARS program. The audits for the Pb method are conducted semi-annually and those for flow (TSP), and continuous CO and SO_2 monitors are conducted at least once per year.

APPENDIX B

FORMULAS FOR COMBINING PROBABILITY LIMITS

Section 5.2, Annual Reports, of Appendix A of 40 CFR Part 58 required that simple unweighted arithmetic averages of the probability limits for precision and accuracy from the four quarterly periods of the calendar year be reported with the annual SLAMS report. The simple unweighted arithmetic averages were specified to simplify the calculations for the states. Such limits would be essentially correct if only random variations occurred between quarters within a reporting organization and between reporting organizations within a state, i.e., if no statistically significant differences occurred between quarters within reporting organizations or between reporting organizations within states. However, experience has shown that significant differences do occur. Because of this fact, it is most correct to combine the data across quarters and across reporting organizations within states (and also across states within regions and across regions within the nation) in the manner described below. These formulas determine the yearly probability limits for the reporting organization which would have been computed from all the individual percent difference values, d_i, obtained during the year. To accomplish this, from each quarterly pair of probability limits, the average, $\overline{D}$, and standard deviation, S_a, are back-calculated:

$$\overline{D} = \frac{LL + UL}{2} \qquad (1)$$

$$S_a = \frac{UL - LL}{2(1.96)} \qquad (2)$$

where LL = lower probability limit
UL = upper probability limit

Except for the effect of the round-off of the reported probability limits to integer values, the above equations determine the original $\overline{D}$ and S_a values used by the reporting organizations to compute the originally reported limits.

Yearly average, D, and standard deivation, S, values are computed from the quarterly values as follows:

$$\bar{\bar{D}} = \frac{\sum n_i \bar{D}_i}{\sum n_i} \qquad (3)$$

where n_i = the number of individual percent difference, d_i, values for each quarter

$$S = \sqrt{\frac{\sum (n_i - 1) S_i^2 + \sum n_i (D_i - D)^2}{(\sum n_i) - 1}} \qquad (4)$$

The appropriate yearly probability limits for the reporting organization are computed using the formulas:

$$UL = \bar{\bar{D}} + 1.96\ S \qquad (5)$$

$$LL = \bar{\bar{D}} - 1.96\ S \qquad (6)$$

NOTE: The same formulas are used for combining yearly reporting organization limits into State limits, State limits into Region limits, and Region limits into National limits.

Example: Suppose that the lower and upper 95% probability limits for CO for precision for the four quarters of a year are:

Quarter	Number of Precision Checks	Lower Probability Limit	Upper Probability Limit
1	10	-8	+6
2	9	-5	+9
3	13	-6	+4
4	7	-12	+11

For Quarter 1:

$$D = \frac{LL + UL}{2} = \frac{-8+6}{2} = -1 \qquad \text{by equation (1)}$$

$$S = \frac{UL - LL}{2(1.96)} = \frac{6-(-8)}{2(1.96)} = 3.6 \qquad \text{by equation (2)}$$

Similar computations for the other quarters, give values in the following table.

Quarter	n	$\overline{D}$	S	$\overline{D} - \overline{\overline{D}}$
1	10	-1	3.6	-0.78
2	9	+2	3.6	2.22
3	13	-1	2.6	-0.78
4	7	-0.5	5.9	-0.28
	39			

Then

$$D = \frac{\sum n_i D_i}{\sum n_i} \qquad \text{by equation (3)}$$

$$= \frac{10(-1) + 9(2) + 13(-1) + 7(-0.5)}{39}$$

$$= \frac{-8.5}{39} = -0.22$$

$$S = \sqrt{\frac{\sum (n_i - 1)\ S_i^2 + \sum n_i (D_i - D)^2}{(\sum n_i) - 1}} \qquad \text{by equation (4)}$$

$$= \sqrt{\frac{9(3.6)^2 + 8(3.6)^2 + 12(2.6)^2 + 6(5.9)^2 + 10(-0.78)^2 + 9(2.22)^2 + 13(-0.78)^2 + 7(-0.28)^2}{39 - 1}}$$

$$= \sqrt{\frac{510.30 + 58.90}{38}}$$

$$= \sqrt{14.98} = 3.87$$

The upper and lower 95% probability limits are then computed as:

$$UL = \overline{\overline{D}} + 1.96\ S \qquad \text{by equation (5)}$$

$$= -0.22 + 1.96(3.87)$$

= 7.37 or 7 rounded off to nearest integer

$LL = \bar{\bar{D}} - 1.96\ S$ by equation (6)

$= -0.22 - 1.96(3.87)$

$= -7.81$ or -8 rounded off to nearest integer

In this particular example, the results by the weighted combined formulas are very close to the simple unweighted arithmetic averages. However, in many cases the weighted combined formulas result in wider limits than the simple unweighted arithmetic averages and more correctly reflect the total variability exhibited by the individual percent differences.

Alternate Method of Computation

An alternate method which eliminates the need to compute $\bar{D}_i - \bar{\bar{D}}$, the differences between the quarterly averages and the weighted annual average, follows.

1. Compute $\bar{D}_i$ and Sa_i for each quarter according to equations (1) and (2) as above.
2. Compute for each quarter.

$$\Sigma d = n_i\ \bar{D}_i \qquad (7)$$

3. Compute for each quarter.

$$\Sigma d^2 = (n_i - 1)\ Sa^2 + \frac{(\Sigma d)^2}{n_i} \qquad (8)$$

4. Compute:

Σn_i = the sum of n for all quarters (9)

$\Sigma\Sigma d$ = the sum of Σd for all quarters (10)

$\Sigma\Sigma d^2$ = the sum of Σd^2 for all quarters (11)

5. Compute $\bar{\bar{D}}$ according to equation (3) above, or

$$\bar{\bar{D}} = \frac{\Sigma\Sigma d}{\Sigma n} \qquad (12)$$

6. Compute S:

$$S = \sqrt{\frac{\Sigma\Sigma d^2 - \frac{(\Sigma\Sigma d)_2}{\Sigma n}}{(\Sigma n) - 1}} \qquad (13)$$

7. Then compute the probability limits, UL and LL, according to equations (5) and (6).

Example

The data for the previous example on page B-2 will be used.

Quarter	Number of Precision Checks	Lower Probability Limit	Upper Probability Limit
1	10	-8	+6
2	9	-5	+9
3	13	-6	+4
4	7	-12	+11

1. $\overline{D}_i$ and Sa_i are computed as before. Compute Σd and Σd^2 by equations (7) and (8) respectively.

Quarter	n	$\overline{D}$	S	Σd	Σd^2
1	10	-1	3.6	-10	126.64
2	9	+2	3.6	+18	139.68
3	13	-1	2.6	-13	94.12
4	7	-0.5	5.9	-3.5	210.61
				-8.5	

For quarter 1:

$$\Sigma d^2 = (n - 1)\, S^2 + \frac{(\Sigma d)^2}{n} \qquad (8)$$

$$= (9)(3.6)^2 + \frac{(-10)^2}{10}$$

$$= 116.64 + 10$$

$$= 126.64$$

2. By equation (12):

$$\bar{\bar{D}} = \frac{\Sigma\Sigma d}{\Sigma n} = \frac{-8.5}{39} = -0.22 \qquad \text{the same as before}$$

3. By equation (13):

$$S = \sqrt{\frac{\Sigma\Sigma d^2 - \frac{(\Sigma\Sigma d)^2}{\Sigma n}}{(\Sigma n) - 1}} \qquad (13)$$

$$S = \sqrt{\frac{571.05 - \frac{(-8.5)^2}{39}}{39 - 1}}$$

$$= \sqrt{\frac{571.05 - 1.85}{38}}$$

$$= \quad 3.87 \qquad \text{the same as before}$$

4. The probability limits are then calculated as before using equations (5) and (6).

A Second Example

The following example more clearly shows computationally and graphically that the arithmetic averages of the quarterly upper and lower probability limits do not correctly reflect the total variability when significant differences occur between quarters. Suppose the following individual percent differences have been obtained for the precision checks for a continuous instrument during the past year.

Quarter	Individual Percent Differences
1	-12, -9, -5, -5, -1, 2
2	1, 4.5, 5, 5, 5.5, 9
3	-6, 0, 5, 5, 10, 16
4	-17, -14, -10, -10, -6, -3

From the previous formulas, the following $\bar{D}$, S, and probability limits for each quarter are calculated.

Quarter	$\bar{D}$	S	n	LL	UL
1	-5	5.10	6	-15	5
2	5	2.55	6	0	10
3	5	7.64	6	-10	20
4	-10	5.10	6	-20	0
				-11.25	8.75
				(-11)	(+9)

As indicated above, the simple arithmetic averages of the lower and upper probability limits are -11.25 and 8.75, or -11 and 9 when rounded-off.

The calculations of the annual probability limits by equations (3) through (6) are shown below.

$$\bar{\bar{D}} = \frac{\Sigma n\bar{D}}{\Sigma n} = \frac{-30}{24} = -1.25 \qquad (3)$$

$$S = \sqrt{\frac{\Sigma(n_i - 1)S_i^2 + \Sigma n_i(\bar{D}_i - \bar{\bar{D}})^2}{(\Sigma n_i) - 1}} \qquad (4)$$

$$= \sqrt{\frac{5(5.10)^2+5(2.55)^2+5(7.64)^2+5(5.10)^2+6(-3.75)^2+6(6.25)^2+6(6.25)^2+6(-8.75)^2}{24 - 1}}$$

$$= \sqrt{\frac{1596.961}{23}} = 8.333$$

$$UL = \bar{\bar{D}} + 1.96\ (S) \qquad (5)$$

$$= -1.25 + 1.96\ (8.333)$$

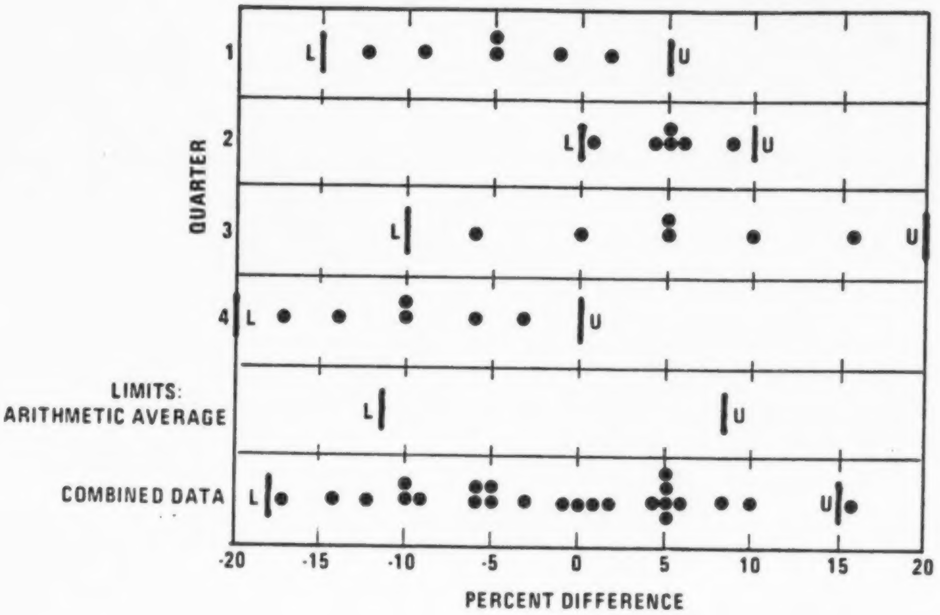
$$= 15.083 \text{ or } (15)$$

$$LL = \bar{\bar{D}} - 1.96\ (S) \qquad (6)$$

$$= -1.25 - 1.96\ (8.333)$$

$$= -17.583 \text{ or } (-18)$$

The individual percent differences, the quarterly probability limits, the arithmetic annual probability limits and the combined annual probability limits are shown graphically on the following figure.



It is clear from the above figure that the combined limits more correctly represent the total spread of the individual percent differences during the year. In fact, the calculated values of the average and standard deviation for all 24 of the individual percent differences are -1.25 and 8.333, respectively, which are in exact agreement with the previous calculations as they must be because of the exact equality of the mathematical formulas involved.

APPENDIX C

LISTING OF REPORTING ORGANIZATIONS

Region	State No.	State Name	Reporting Organization No.	Reporting Organization Name
01	07	CONNECTICUT	001	AIR MONIT. SEC. DEPT. OF ENV. PROTECT.
01	20	MAINE	001	BUREAU OF A.Q.C. DEPT. OF ENV. PROTECT.
01	22	MASSACHUSETTS	001	DIV. OF AQC. DEPT. OF ENV. QUAL. ENG.
01	30	NEW HAMPSHIRE	001	AIR RESOURCES AGENCY
01	41	RHODE ISLAND	001	DIV. OF A. HAZ. MAT. DEPT. OF ENV. MANAGE.
01	47	VERMONT	001	AIR & SOLID WASTE PROGRAMS
02	31	NEW JERSEY	001	DEPT. OF ENV. PROT., DIV. OF ENV. QUAL.
02	33	NEW YORK	001	DEPT. OF ENV. CONSERV., DIV. OF AIR
02	40	PUERTO RICO	001	ENVIRONMENTAL QUALITY BOARD
02	55	VIRGIN ISLANDS	001	DEPT. OF CONS. AND CULTURAL AFFAIRS
03	08	DELAWARE	001	STATE OF DELAWARE, DNR & EC
03	09	DISTRICT OF COLUMBIA	001	WASHINGTON, DC DC & RA
03	21	MARYLAND	001	STATE OF MARYLAND
03	21	MARYLAND	002	ALLEGANY COUNTY
03	21	MARYLAND	003	ANNE ARUNDEL COUNTY
03	21	MARYLAND	005	BALTIMORE COUNTY
03	21	MARYLAND	006	PRINCE GEORGE'S COUNTY
03	39	PENNSYLVANIA	001	PENNSYLVANIA DER
03	39	PENNSYLVANIA	002	ALLEGHENY CO. BAPC
03	39	PENNSYLVANIA	003	PHILADELPHIA AMS
03	48	VIRGINIA	001	VIRGINIA STATE AIR POLL. CONTROL BOARD
03	48	VIRGINIA	002	CITY OF ALEXANDRIA
03	48	VIRGINIA	003	FAIRFAX COUNTY
03	48	VIRGINIA	005	ROANOKE COUNTY
03	50	WEST VIRGINIA	001	STATE OF WEST VIRGINIA
03	50	WEST VIRGINIA	002	WVA NORTHERN PANHANDLE REGIONAL OFFICE
04	01	ALABAMA	011	ALABAMA DEPT. OF ENVIRONMENTAL MGT.
04	01	ALABAMA	012	AL, JEFFERSON CNTY. BUREAU OF ENV. HLTH.
04	01	ALABAMA	013	AL DEPT. OF ENV. MANAGEMENT - MOBILE
04	01	ALABAMA	014	AL, HUNTSVILLE AIR POLL. CONTROL DEPT.
04	01	ALABAMA	015	AL, TRICOUNTY DIV. OF AIR POLL. CONTROL
04	01	ALABAMA	016	TENNESSEE VALLEY AUTHORITY - ALABAMA
04	10	FLORIDA	001	FDER, NORTHWEST DISTRICT
04	10	FLORIDA	002	FDER, NORTHEAST DISTRICT
04	10	FLORIDA	003	FDER, ST. JOHNS RIVER DISTRICT
04	10	FLORIDA	004	FDER, SOUTHWEST DISTRICT
04	10	FLORIDA	005	FDER, SOUTH FLORIDA DISTRICT
04	10	FLORIDA	006	FDER, SOUTHEAST FLORIDA DISTRICT
04	10	FLORIDA	007	FDER, NORTHEAST DISTRICT BRANCH OFFICE
04	10	FLORIDA	011	FL, JACKSONVILLE BIO-ENV. SERVICES DIV.
04	10	FLORIDA	012	FL, HILLSBOROUGH CO., ENV. SERVICES DIV.
04	10	FLORIDA	013	FL, PINELAS CO. DEPT. OF ENV. MANAGEMENT

	State		Reporting Organization	
Region	No.	Name	No.	Name
04	10	FLORIDA	014	FL, MANATEE COUNTY HEALTH DEPARTMENT
04	10	FLORIDA	015	FL, SARASOTA CO. AIR POLL. CONTROL DIV.
04	10	FLORIDA	016	FL, PALM BEACH COUNTY HEALTH DEPARTMENT
04	10	FLORIDA	017	FL, BROWARD CO. ENV. QUAL. CONTROL BOARD
04	10	FLORIDA	018	FL, DADE CO. DEPT OF ENV. RESOURCES MGT.
04	11	GEORGIA	010	GEORGIA AIR QUAL. EVALUATION SECTION EPD
04	18	KENTUCKY	001	KENTUCKY DIV. OF AIR POLL. CONTROL
04	18	KENTUCKY	002	KY, JEFFERSON CO. AIR POLL. CONTROL DIST.
04	18	KENTUCKY	003	TENNESSEE VALLEY AUTHORITY - KENTUCKY
04	25	MISSISSIPPI	100	MISSISSIPPI BUREAU OF POLLUTION CONTROL
04	34	NORTH CAROLINA	001	NC NATURAL RESOURCES & COMMUNITY DEVEL.
04	34	NORTH CAROLINA	002	NC, FORSYTH COUNTY ENV. AFFAIRS DEPT.
04	34	NORTH CAROLINA	003	NC, MECKLENBURG CO. DEPT. OF ENV. HEALTH
04	34	NORTH CAROLINA	004	NC, WESTERN REGIONAL AIR POLL. CONTROL
04	42	SOUTH CAROLINA	001	SC DEPT. OF HEALTH & ENV. CONTROL
04	44	TENNESSEE	001	TENNESSEE DIV. OF AIR POLL. CONTROL
04	44	TENNESSEE	002	TN, MEMPHIS-SHELBY CO. HEALTH DEPARTMENT
04	44	TENNESSEE	003	METRO HEALTH DEPT. NASHVILLE-DAVIDSON CO.
04	44	TENNESSEE	004	TN, KNOX COUNTY DEPT. OF AIR POLL. CONTROL
04	44	TENNESSEE	005	TN, CHATTANOGGA-HAMILTON CO. AIR POLL. CONT.
04	44	TENNESSEE	006	TENNESSEE VALLEY AUTHORITY - TENNESSEE
05	14	ILLINOIS	001	DIV. OF AIR POLL. CONT., ILLINOIS EPA
05	14	ILLINOIS	002	CHICAGO DEPT. OF CONSUMER SERVICES
05	14	ILLINOIS	003	COOK COUNTY DEPT. OF ENVIRONMENTAL CONT.
05	15	INDIANA	001	AIR POLL. CONT. DIV. OF INDIANA STATE
05	15	INDIANA	002	DIV. OF AIR POLL. CONT., EVANSVILLE
05	15	INDIANA	003	ST. JOSEPH COUNTY
05	15	INDIANA	005	AIR POLL. CONT. DIV., VIGO COUNTY
05	15	INDIANA	008	INDIANAPOLIS APC DIVISION
05	15	INDIANA	009	ANDERSON LOCAL AGENCY
05	15	INDIANA	010	PORTER COUNTY HEALTH DEPARTMENT
05	15	INDIANA	100	LAKE COUNTY CONSOLDTD. AQ MONIT. WRK. GRP.
05	23	MICHIGAN	001	AIR QUAL. DIV., MI DEPT. OF NAT. RES.
05	23	MICHIGAN	002	AIR POLL. CONT. DIV., WAYNE COUNTY
05	24	MINNESOTA	001	MINNESOTA POLL. CONT. AGENCY, AIR MO
05	36	OHIO	001	OHIO EPA, CENTRAL DISTRICT OFFICE
05	36	OHIO	002	OHIO EPA, NORTHEAST DISTRICT OFFICE
05	36	OHIO	003	OHIO EPA, NORTHWEST DISTRICT OFFICE
05	36	OHIO	004	OHIO EPA, SOUTHEAST DISTRICT OFFICE
05	36	OHIO	005	OHIO EPA, SOUTHWEST DISTRICT OFFICE
05	36	OHIO	006	AKRON AIR POLLUTION CONTROL
05	36	OHIO	007	AIR POLL. CONT. DIV., CANTON CITY
05	36	OHIO	008	SOUTHWESTERN OHIO AIR POLL. AGENCY
05	36	OHIO	009	CLEVELAND DIV. OF AIR POLL. AGENCY
05	36	OHIO	010	REGIONAL APC AGENCY, DAYTON
05	36	OHIO	012	AIR POLL. CONT. DIV. OF LAKE COUNTY
05	36	OHIO	013	AIR POLL. UNIT, PORTSMOUTH CITY
05	36	OHIO	014	NORTH OHIO VALLEY AIR AUTHORITY

	State		Reporting Organization	
Region	No.	Name	No.	Name
05	36	OHIO	015	TOLEDO POLL. CONTROL AGENCY
05	36	OHIO	016	MAHONING TRUMBULL AIR POLL. CONTROL
05	51	WISCONSIN	001	WI. DEPT. OF NAT. RES., AIR MONIT. UNIT
06	04	ARKANSAS	001	DEPT. OF POLL. CONT. & ECOLOGY CONT. MON
06	04	ARKANSAS	002	DEPT. OF POLL. CONT. & ECOLOGY
06	19	LOUISIANA	001	DEPT. OF NATURAL RESOURCES, NEW ORLEANS
06	32	NEW MEXICO	001	ENV. IMPROVEMENT DIV., SANTA FE
06	32	NEW MEXICO	002	CITY OF ALBUQUERQUE ENV. HEALTH DIV.
06	37	OKLAHOMA	101	OK STATE DEPT. OF HEALTH
06	37	OKLAHOMA	102	OKLAHOMA CITY-CNTY. HEALTH DEPT.
06	37	OKLAHOMA	103	TULSA CITY-CNTY. HEALTH DEPT.
06	45	TEXAS	001	TEXAS AIR CONTROL BOARD
06	45	TEXAS	002	DALLAS ENV. HEALTH & CONSERVATION DEPT.
06	45	TEXAS	003	EL PASO CITY-CNTY. HEALTH DEPT.
06	45	TEXAS	004	FT. WORTH PUBLIC HEALTH DEPT.
06	45	TEXAS	005	GALVESTON COUNTY HEALTH DISTRICT
06	45	TEXAS	006	HOUSTON DEPT. OF PUBLIC HEALTH
06	45	TEXAS	007	SAN ANTONIO METRO. HEALTH DISTRICT
07	16	IOWA	001	POLK COUNTY PHYSICAL PLANNING
07	16	IOWA	002	LINN COUNTY HEALTH DEPARTMENT
07	16	IOWA	003	UNIVERSITY HYGIENIC LABORATORY
07	17	KANSAS	001	STATE OF KANSAS
07	26	MISSOURI	001	LABORATORY SERVICES PROGRAM
07	26	MISSOURI	002	ST. LOUIS COUNTY
07	26	MISSOURI	003	ST. LOUIS CITY
07	26	MISSOURI	004	KANSAS CITY
07	26	MISSOURI	005	SPRINGFIELD
07	26	MISSOURI	006	AMAX LEAD CO. OF MO, BOSS, MO
07	26	MISSOURI	007	ST. JOE LEAD CO., HERCULANEUM, MO
07	28	NEBRASKA	001	STATE OF NEBRASKA
07	28	NEBRASKA	002	LINCOLN
07	28	NEBRASKA	003	OMAHA
08	06	COLORADO	001	DEPARTMENT OF HEALTH
08	27	MONTANA	001	MT AIR QUAL. BUREAU, DEPT. OF H&ENV.
08	27	MONTANA	002	YELLOWSTONE CNTY. AIR POLL. CONT. AGY.
08	27	MONTANA	003	GREAT FALLS CITY-CNTY. HEALTH DEPT.
08	27	MONTANA	004	MISSOULA CITY-CNTY HEALTH DEPT.
08	35	NORTH DAKOTA	001	STATE DEPARTMENT OF HEALTH
08	43	SOUTH DAKOTA	001	DEPT. OF HEALTH, DIV. OF ENV. HEALTH
08	46	UTAH	001	STATE BUREAU OF AIR QUALITY
08	52	WYOMING	001	DEPT. OF ENV. QUAL., AIR QUAL. DIV.
09	03	ARIZONA	100	ARIZONA DEPT. OF HEALTH SERVICES
09	03	ARIZONA	200	MARICOPA COUNTY
09	03	ARIZONA	300	PIMA COUNTY
09	05	CALIFORNIA	001	CALIFORNIA AIR RESOURCES BOARD
09	05	CALIFORNIA	004	BAY AREA AIR QUAL. MANAGEMENT DISTRICT
09	05	CALIFORNIA	036	SAN DIEGO AIR POLL. CONTROL DISTRICT
09	05	CALIFORNIA	061	SOUTH COAST AIR QUAL. MANAGEMENT DIST.

Region	State No.	State Name	Reporting Organization No.	Reporting Organization Name
09	05	CALIFORNIA	061	SOUTH COAST AIR QUAL. MANAGEMENT DIST.
09	12	HAWAII	120	STATE OF HAWAII, DEPT. OF HEALTH
09	29	NEVADA	100	NEVADA DIV. OF ENV. PROTECTION
09	29	NEVADA	200	WASHOE COUNTY
09	29	NEVADA	300	CLARK COUNTY
09	54	GUAM	100	GUAM EPA
10	02	ALASKA	020	DEPT. OF ENVIRONMENTAL CONSERVATION
10	13	IDAHO	001	DEPARTMENT OF HEALTH AND WELFARE
10	38	OREGON	001	DEPT. OF ENVIRONMENTAL QUALITY
10	49	WASHINGTON	001	DEPT. OF ECOLOGY

APPENDIX D

PRECISION AND ACCURACY DATA BY REPORTING ORGANIZATION

NOTE: In Tables D-1 through D-8, the number of accuracy audits listed consider each audit level as a separate audit. For example, consider CO audits for Massachusetts, Reporting Organization 22001. The number of audits is 12, which would indicate that four CO instruments were audited at each of the three levels. Also, the number of analyzers (NO. ANALYZERS), number of samplers (NO. SAMPLERS) and number of collocated sites (NO. COLL. SITES) have been summed across the four quarters, thereby being four times the actual number. In those cases where the numbers given are not multiples of four, the number of analyzers, samplers, or sites were not the same for all four quarters.

Explanation of Column Heading Abbreviations for Tables D-1, D-2, D-3, D-4 (Continuous Methods)

No.	Column Heading abbreviation	Explanation
1	REP. ORG.	Reporting organization SLAMS number
	STATE	Two letter state abbreviation
	REGION	EPA regional office number (RGO#)
2	NO. SITES SLAMS	Number of SLAMS sites, not including NAMS
3	NO. SITES NAMS	Number of NAMS sites
4	NO. ANALYZERS	Number of analyzers
5	NO. PRECISION CHECKS	Number of precision checks performed and reported
	PROBABILITY LIMITS	Probability limits
6	LOW	Lower probability limits
7	UP	Upper probability limits
8	NO. AUDITS	Number of accuracy audits per
9	NO. AUDITS AT LEVEL 4	Number of audits of level 4
	LEVEL 1	
10	LOW	Lower probability limits
11	UP	Upper probability limits
	LEVEL 2	
12	LOW	Lower probability limits
13	UP	Upper probability limits
	LEVEL 3	
14	LOW	Lower probability limits
15	UP	Upper probability limits
	LEVEL 4	
16	LOW	Lower probability limits
17	UP	Upper probability limits

TABLE D-1. CO PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	PRECISION NO. ANALYZERS	PRECISION NO. PRECISION CHECKS	PRECISION PROBABILITY LIMITS LOW	PRECISION PROBABILITY LIMITS UP	ACCURACY NO. AUDITS	ACCURACY NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
07001	5	0	20	141	-10	+09	6	0	-06	+14	-05	+05	-02	+03		
**CT	5	0	20	141	-10	+09	6	0	-06	+14	-05	+05	-02	+03		
20001	1	0	4	42	-02	+08	4	0	-02	+10	-07	+11	-10	+11		
**ME	1	0	4	42	-02	+08	4	0	-02	+10	-07	+11	-10	+11		
22001	4	4	32	248	-03	+09	12	0	-06	+13	-07	+12	-08	+09		
**MA	4	4	32	248	-03	+09	12	0	-06	+13	-07	+12	-08	+09		
30001	2	0	8	195	-06	+06	9	0	-11	+09	-06	+07	-02	+06		
**NH	2	0	8	195	-06	+06	9	0	-11	+09	-06	+07	-02	+06		
41001	0	2	8	123	-06	+04	11	0	-01	+06	-03	+02	-03	+03		
**RI	0	2	8	123	-06	+04	11	0	-01	+06	-03	+02	-03	+03		
47001	1	0	4	42	-07	+04	4	0	-11	+09	-07	+07	-06	+10		
**VT	1	0	4	42	-07	+04	4	0	-11	+09	-07	+07	-06	+10		
*RG01	13	6	76	791	-06	+08	46	0	-07	+11	-06	+08	-05	+07		
31001	12	2	56	384	-09	+09	28	0	-08	+13	-04	+10	-08	+10		
**NJ	12	2	56	384	-09	+09	28	0	-08	+13	-04	+10	-08	+10		
33001	6	7	52	465	-07	+04	69	0	-11	+10	-06	+06	-03	+03		
**NY	6	7	52	465	-07	+04	69	0	-11	+10	-06	+06	-03	+03		
40001	1	2	10	105	-03	+10	7	0	-05	+10	-08	+09	-08	+10		
**PR	1	2	10	105	-03	+10	7	0	-05	+10	-08	+09	-08	+10		
*RG02	19	11	118	954	-08	+07	104	0	-10	+11	-06	+08	-05	+05		
08001	1	0	8	54	-06	+10	8	0	-07	+16	-07	+08	-04	+08		
**DE	1	0	8	54	-06	+10	8	0	-07	+16	-07	+08	-04	+08		
09001	0	2	9	59	-02	+03	4	0	+00	+06	-02	+01	-02	+00		
**DC	0	2	9	59	-02	+03	4	0	+00	+06	-02	+01	-02	+00		
21001	4	2	25	384	-05	+05	24	0	-07	+08	-06	+04	-05	+04		
**MD	4	2	25	384	-05	+05	24	0	-07	+08	-06	+04	-05	+04		
39001	5	0	85	549	-06	+10	24	0	-15	+08	-12	+04	-12	+05		
39002	1	2	8	108	-07	+02	10	0	-05	+01	-02	+03	-03	+04		
39003	4	2	22	128	-08	+06	8	0	-12	+10	-09	+09	-09	+07		
**PA	10	4	115	785	-08	+09	42	0	-13	+07	-11	+06	-10	+06		
48001	5	2	32	239	-05	+05	8	0	-05	+04	-07	+03	-07	+03		
48003	3	0	16	94	-08	+07	13	0	-04	+04	-03	+05	-03	+09		
**VA	8	2	48	333	-06	+06	21	0	-05	+04	-05	+05	-06	+08		
50001	1	0	8	47	-19	+05	3	0	-10	+03	-04	+00	-08	-02		
50002	1	0	8	93	-10	+07	6	0	-14	-03	-06	+02	-06	+02		

(continued)

TABLE D-1 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
					PROBABILITY LIMITS				PROBABILITY LIMITS							
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LOW	UP	LOW	UP	LOW	UP	LOW	UP
**WV	2	0	16	140	-14	+07	9	0	-14	+01	-05	+01	-08	+01		
*RG03	25	10	221	1,675	-08	+08	108	0	-11	+09	-08	+05	-08	+06		
01012	3	2	16	93	-10	+09	20	0	-19	+12	-16	+10	-17	+12		
**AL	3	2	16	93	-10	+09	20	0	-19	+12	-16	+10	-17	+12		
10001	1	0	4	40	-15	+11	6	0	-11	+11	-07	+09	-13	+14		
10003	0	0	2	17	-20	+10	1	0								
10011	3	2	20	342	-10	+07	15	0	-11	+10	-09	+08	-08	+08		
10012	3	2	20	145	-07	+04	6	0	-16	+06	-12	+04	-07	+04		
10013	2	2	16	112	-04	+05	19	0	-15	+11	-10	+05	-08	+06		
10016	1	0	4	48	-08	+02	6	0	-20	+21	-13	+10	-12	+08		
10017	3	2	19	114	-07	+06	8	0	-10	+47	-08	+23	-04	+16		
10018	2	2	16	173	-08	+08	11	0	-20	+26	-16	+19	-15	+16		
10020	2	0	6	46	-24	+14	4	0	-11	+22	-14	+15	-17	+08		
**FL	17	10	107	1,037	-10	+08	76	0	-10	+20	-12	+12	-10	+10		
11010	4	2	17	208	-11	+02	6	0	-30	-06	-12	+03	-07	+05		
**GA	4	2	17	208	-11	+02	6	0	-30	-06	-12	+03	-07	+05		
18001	7	0	24	157	-06	+07	24	0	-11	+21	-06	+08	-05	+06		
18002	1	2	12	76	-17	+07	5	0	-17	+06	-09	+07	-07	+05		
**KY	8	2	36	233	-11	+09	29	0	-14	+20	-07	+07	-06	+05		
25100	1	0	4	36	-04	+05	4	0	-08	+04	-04	+00	-11	+04		
**MS	1	0	4	36	-04	+05	4	0	-08	+04	-04	+00	-11	+04		
34001	4	0	15	91	-09	+06	18	0	-08	+06	-06	+06	-05	+05		
34002	2	0	8	60	-07	+06	8	0	-06	+13	-05	+08	-04	+06		
34003	3	2	20	124	-04	+05	23	0	-07	+06	-02	+06	-01	+04		
**NC	9	2	43	275	-07	+05	49	0	-08	+08	-04	+06	-03	+05		
42001	2	0	8	52	-12	+07	52	0	-10	+13	-11	+07	-10	+05		
**SC	2	0	8	52	-12	+07	52	0	-10	+13	-11	+07	-10	+05		
44002	3	2	20	123	-03	+04	38	0	-07	+10	-05	+07	-02	+04		
44003	3	2	18	105	-06	+04	29	0	-08	+05	-07	+05	-06	+04		
44004	1	0	4	29	-07	+05	8	0	-09	+04	-03	+05	-05	+03		
44005	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**TN	8	4	42	257	-05	+04	75	0	-08	+08	-06	+06	-04	+04		
*RG04	52	22	273	2,191	-10	+07	311	0	-16	+14	-10	+09	-08	+07		
14001	8	1	36	324	-13	+06	9	0	-13	+11	-05	+06	-05	+04		
14003	4	1	20	160	-09	+07	8	0	-08	+06	-05	+05	-05	+05		
**IL	12	2	56	484	-12	+06	17	0	-10	+08	-05	+06	-05	+05		
15001	1	2	12	66	-13	+08	14	0	-21	+04	-07	+11	-05	+12		
15002	1	0	4	22	-09	+09	12	0	-13	+11	-09	+09	-10	+08		
15008	3	0	11	65	-05	+03	11	0	-07	+06	-05	+05	-06	+06		
15100	2	0	9	45	-14	+09	8	0	-31	+14	-09	+15	-06	+11		
**IN	7	2	36	198	-11	+07	45	0	-20	+11	-08	+10	-07	+10		
23001	4	0	20	135	-07	+03	8	0	-11	+10	-11	+07	-12	+07		
23002	4	2	17	84*	-10	+15	7	0	-13	+19	-11	+09	-06	+06		
**MI	8	2	37	219	-10	+09	15	0	-12	+14	-11	+08	-09	+07		

(continued)

TABLE D-1 (Continued)

			AUTOMATED ANALYZERS													
			PRECISION				ACCURACY									
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
24001	5	2	19	349	-08	+08	16	0	-15	+13	-04	+07	-05	+04		
**MN	5	2	19	349	-08	+08	16	0	-15	+13	-04	+07	-05	+04		
36001	1	2	12	67	-08	+14	5	0	-10	+19	-07	+12	-05	+15		
36006	0	2	8	52	-09	+04	5	0	-11	+14	-04	+08	-02	+08		
36007	1	0	4	26	-11	+08	5	0	-10	+04	-08	+06	-08	+04		
36008	3	2	17	102	-13	+12	6	0	-04	+11	-05	+07	-09	+04		
36009	0	2	8	54	-04	+06	6	0	-12	+17	-08	+06	-05	+04		
36010	0	2	8	49	-10	+01	4	0	-29	+22	-13	+11	-06	+05		
36012	1	0	4	30	-08	+05	5	0	-04	+18	+00	+05	-05	+06		
36014	1	0	2	10*	+00	+15	0*	0								
36015	2	0	8	79	-05	+03	4	0	-11	+01	-08	+01	-03	+02		
36016	1	0	3	18	-04	+06	6	0	-05	+04	-03	+05	-04	+03		
**OH	10	10	74	487	-10	+09	46	0	-13	+14	-07	+08	-07	+07		
51001	5	2	28	187	-07	+09	10	0	-11	+21	-06	+09	-04	+05		
**WI	5	2	28	187	-07	+09	10	0	-11	+21	-06	+09	-04	+05		
*RG05	47	20	250	1,924	-10	+08	149	0	-16	+14	-07	+08	-07	+07		
19001	1	2	12	81	-12	+07	12	0	-13	+01	-10	+04	-08	+07		
**LA	1	2	12	81	-12	+07	12	0	-13	+01	-10	+04	-08	+07		
32001	4	0	15	87	-11	+09	12	0	-07	+11	-06	+07	-07	+07		
32002	3	2	19	99	-08	+07	14	0	-12	+07	-09	+06	-17	+09		
**NM	7	2	34	186	-09	+08	26	0	-11	+10	-08	+07	-13	+09		
37101	2	0	8	48	-10	+12	4	0	-33	+15	-27	+09	-25	+10		
37102	0	2	8	58	-08	+13	12	0	-12	+13	-08	+09	-08	+09		
37103	2	0	8	47	-05	+06	9	0	-10	+09	-05	+03	-01	+03		
**OK	4	2	24	153	-08	+11	25	0	-16	+13	-13	+10	-11	+10		
45001	3	5	40	1,728	-08	+09	10	0	-29	+24	-14	+15	-12	+12		
45002	0	2	8	61	-08	+11	6	0	-15	+08	-14	+11	-15	+10		
45003	1	0	4	22	-07	+04	4	0	-05	+06	-01	+04	+00	+04		
45006	1	1	8	51	-10	+03	8	0	-11	+10	-06	+04	-04	+03		
**TX	5	8	60	1,862	-08	+09	28	0	-19	+16	-10	+10	-09	+09		
*RG06	17	14	130	2,282	-08	+09	91	0	-16	+12	-10	+08	-11	+09		
16001	2	0	11	104	-11	+06	8	0	-14	+09	-06	+02	-01	+03		
16002	1	0	3	18	-15	+05	9	0	-14	+04	-05	+01	-09	+05		
16003	1	0	3	15*	-03	+11	3	0	-22	+03	-08	-01	-03	+01		
**IO	4	0	17	137	-12	+07	20	0	-16	+06	-06	+01	-07	+05		
17001	3	0	12	64	-06	+10	5	0	-20	+34	-07	+11	-07	+09		
**KS	3	0	12	64	-06	+10	5	0	-20	+34	-07	+11	-07	+09		
26001	0	1	7	46	-13	+11	6	0	-06	+16	-09	+15	-17	+18		
26002	4	0	20	137	-16	+18	8	0	-25	+15	-11	+09	-09	+05		
26003	0	2	8	52	-15	+21	6	0	-41	+25	-22	+13	-23	+09		
26004	2	1	14	79	-08	+08	6	0	-10	+08	-10	+06	-11	+02		
26005	1	0	5	30	-05	+11	6	0	-06	+15	-03	+07	-04	+06		
**MO	[illegible]	[illegible]	54	344	-14	+15	32	0	-22	+18	-12	+11	-14	+09		
28002	2	0	8	46	-06	+06	8	0	-13	+09	-06	+02	-10	+02		

(continued)

TABLE D-1 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
					PROBABILITY LIMITS				PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
28003	1	0	5	28	-08	+07	4	0	-08	+03	-07	+03	-05	+02		
**MB	3	0	13	74	-06	+06	12	0	-12	+07	-06	+02	-09	+03		
*RG07	17	4	96	619	-12	+13	69	0	-19	+15	-10	+07	-10	+07		
06001	11	2	51	300	-08	+10	23	6	-12	+20	-07	+12	-06	+10	-25	+15
**CO	11	2	51	300	-08	+10	23	6	-12	+20	-07	+12	-06	+10	-25	+15
27002	1	0	4	52	-15	+17	5	0	-25	+20	-13	+08	-11	+02		
27003	1	0	4	49	-04	+05	7	0	-15	+19	-09	+12	-05	+08		
27004	2	0	4	27*	-09	+13	4	0	-19	+12	-13	+10	-05	+07		
**MT	4	0	12	128	-11	+13	16	0	-18	+17	-11	+10	-08	+08		
46001	6	2	26	325	-04	+04	24	0	-09	+12	-04	+05	-04	+05		
**UT	6	2	26	325	-04	+04	24	0	-09	+12	-04	+05	-04	+05		
*RG08	21	4	89	753	-07	+09	63	6	-13	+16	-08	+10	-06	+08	-25	+15
03100	3	0	8	38*	-05	+06	4	4	-03	+06	-09	+11	-06	+08	-09	+11
03200	7	2	35	186	-12	-01	8*	0	-12	+11	-04	+04	-07	+06		
03300	1	2	12	62	-04	+05	5	0	+00	+02	-04	+03	-05	+04		
**AZ	11	4	55	286	-12	+04	17	4	-08	+09	-06	+06	-06	+06	-09	+11
05001	30	3	102	592*	-06	+12	33	0	-09	+14	-08	+09	-08	+07		
05004	11	4	64	417	-04	+04	31	0	-06	+04	-03	+02	-02	+02		
05036	5	2	28	172	-02	+08	8	0	-05	+08	-02	+07	-03	+05		
05061	18	3	91	563	-05	+11	24	0	-07	+12	-06	+07	-07	+02		
**CA	64	12	286	1,744	-05	+10	96	0	-08	+10	-06	+07	-06	+05		
12120	0	2	?	?	???	???	?	?	???	???	???	???	???	???		
**HI	0	2	?	?	???	???	?	?	???	???	???	???	???	???		
29100	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
29200	1	1	?	?	???	???	?	?	???	???	???	???	???	???		
29300	0	1	6	35	-13	+07	4	6	+00	+02	+03	+12	-03	+08	-02	+04
**NV	3	2	6	35*	-13	+07	4*	6	+00	+02	+03	+12	-03	+08	-02	+04
*RG09	78	20	347	2,065	-08	+10	117	10	-08	+10	-06	+08	-06	+05	-05	+07
02020	6	0	6	43*	-03	+01	12	0	-05	+04	-02	+03	-03	+06		
**AK	6	0	6	43*	-03	+01	12	0	-05	+04	-02	+03	-03	+06		
13001	2	0	8	75	-30	+19	8	0	-08	+01	-08	+01	-07	+03		
**ID	2	0	8	75	-30	+19	8	0	-08	+01	-08	+01	-07	+03		
38001	6	2	31	388	-04	+07	49	0	-16	+15	-09	+07	-08	+05		
**OR	6	2	31	388	-04	+07	49	0	-16	+15	-09	+07	-08	+05		
49001	14	2	60	785	-08	+01	32	0	-10	+08	-07	+05	-08	+03		
**WA	14	2	60	785	-08	+01	32	0	-10	+08	-07	+05	-08	+03		
*RG10	28	4	105	1,211	-11	+07	101	0	-13	+11	-08	+06	-08	+05		
NATION	317	115	1,785	14,465	-09	+09	1,159	16	-14	+13	-08	+08	-08	+07	-19	+14

TABLE D-2. CONTINUOUS SO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

			AUTOMATED ANALYZERS													
REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
					LOW	UP			LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
									LOW	UP	LOW	UP	LOW	UP	LOW	UP
07001	16	2	72	565	-11	+07	19	0	-07	+04	-05	+04	-06	+02		
**CT	16	2	72	565	-11	+07	19	0	-07	+04	-05	+04	-06	+02		
20001	0	2	8	106	-09	+05	9	0	-04	+07	-06	+05	-05	+03		
**ME	0	2	8	106	-09	+05	9	0	-04	+07	-06	+05	-05	+03		
22001	6	11	68	538	-12	+07	26	0	-12	+10	-13	+10	-12	+11		
**MA	6	11	68	538	-12	+07	26	0	-12	+10	-13	+10	-12	+11		
30001	5	1	27	752	-11	+07	27	0	-11	+07	-10	+08	-09	+10		
**NH	5	1	27	752	-11	+07	27	0	-11	+07	-10	+08	-09	+10		
41001	0	4	19	401	-07	+07	23	0	-20	+19	-13	+13	-13	+12		
**RI	0	4	19	401	-07	+07	23	0	-20	+19	-13	+13	-13	+12		
47001	2	1	12	103	-10	+06	11	0	-12	+06	-09	+06	-08	+06		
**VT	2	1	12	103	-10	+06	11	0	-12	+06	-09	+06	-08	+06		
*RG01	29	21	206	2,465	-11	+07	115	0	-13	+10	-10	+09	-10	+09		
31001	11	8	76	505	-13	+13	47	0	-13	+12	-10	+10				
**NJ	11	8	76	505	-13	+13	47	0	-13	+12	-10	+10				
33001	13	17	120	749	-06	+08	173	0	-11	+14	-10	+12	-10	+12		
**NY	13	17	120	749	-06	+08	173	0	-11	+14	-10	+12	-10	+12		
40001	3	0	18	123	-12	+04	15	0	-14	+05	-09	+04	-09	+03		
**PR	3	0	18	123	-12	+04	15	0	-14	+05	-09	+04	-09	+03		
55001	3	0	?	?	???	???	?	?	???	???	???	???	???	???		
**VI	3	0	?	?	???	???	?	?	???	???	???	???	???	???		
*RG02	30	25	214	1,377	-10	+10	235	0	-12	+13	-10	+11	-11	+11		
08001	1	1	32	305	-07	+09	8	0	+02	+08	-03	+08	-03	+05		
**DE	1	1	32	305	-07	+09	8	0	+02	+08	-03	+08	-03	+05		
09001	0	2	8	55	-13	+02	4	0	-09	+02	-11	+06	-13	+09		
**DC	0	2	8	55	-13	+02	4	0	-09	+02	-11	+06	-13	+09		
21001	1	5	24	293	-09	+07	22	0	-14	+06	-12	+07	-12	+07		
21003	1	0	5	36	-07	+05	8	0	-11	+11	-09	+07	-10	+05		
21005	1	0	4	45	-07	+03	7	0	-07	+01	-04	+02	-04	+02		
**MD	3	5	33	374	-09	+06	37	0	-12	+07	-10	+06	-10	+06		
39001	5	12	125	811	-10	+11	31	0	-11	+13	-11	+13	-11	+12		
39002	2	5	34	587	-08	+07	34	0	-12	+06	-10	+06	-10	+07		
39003	0	5	27	151	-12	+10	8	0	-18	+03	-09	+01	-05	+03		
**PA	7	22	186	1,549	-10	+09	73	0	-13	+10	-11	+10	-10	+09		
48001	1	7	36	268	-09	+04	10	0	-11	+07	-08	+05	-10	+03		

(continued)

TABLE D-2 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
48003	0	0	16	77	-27	+14	14	0	-11	+10	-11	+12	-09	+13		
**VA	1	7	52	345	-15	+05	24	0	-11	+08	-10	+09	-11	+10		
50001	1	3	24	142	-10	+10	20	4	-12	+08	-07	+08	-08	+07	-07	+05
50002	4	2	24	275	-08	+11	22	0	-12	+11	-05	+07	-06	+06		
**WV	5	5	48	417	-09	+11	42	4	-12	+10	-06	+08	-07	+06	-07	+05
*RG03	17	42	359	3,045	-11	+09	188	4	-12	+09	-10	+09	-10	+08	-07	+05
01012	1	0	3	17*	-08	+08	8	0	-08	+06	+01	+03	+01	+07		
01013	0	1	6	31	-15	+11	2	0	-26	+05	-23	+07	-22	+05		
01015	1	0	4	24	-13	+11	5	0	-13	+14	-14	+18	-09	-02		
01016	0	0	36	2,957	-06	+09	9	7	-10	+07	-15	+12	-14	+10	-08	+05
**AL	2	1	49	3,029	-07	+09	24	7	-12	+09	-12	+12	-12	+11	-08	+05
10001	2	0	4	35*	-15	+13	6	0	-34	+27	-17	+12	-12	+13		
10002	2	0	10	121	-18	+11	6	0	-27	+17	-08	+11	+00	+05		
10003	1	0	5	61	-13	+07	6	0	-23	+05	-17	+11	-16	+11		
10004	2	0	4	16*	-10	+05	6	0	-16	+27	-05	+22	+01	+18		
10005	0	0	4	21	-20	+12	6	0	-37	+61	-04	+22	-07	+21		
10007	1	0	7	25	-22	+10	7	0	-22	+17	-12	+16	-12	+11		
10011	3	1	16	375	-15	+01	20	0	-21	+15	-12	+10	-11	+12		
10012	3	2	28	179	-13	+07	8	2	-09	+07	-06	+07	-07	+10	-02	+04
10013	1	2	16	208	-09	+05	18	0	-16	+05	-15	+08	-15	+09		
10015	0	0	8	81	-12	+09	6	0	-14	+18	-06	+12	-39	+25		
10016	1	0	4	47	-12	+06	6	0	-10	+10	-09	+15	-05	+11		
10018	1	0	1	4*	-25	+00	0*	0								
10020	1	0	3	23	-12	+07	4	0	-10	+05	-04	+11	-02	+11		
**FL	18	5	110	1,196	-15	+06	99	2	-22	+17	-13	+13	-13	+14	-02	+04
11010	10	1	36	373	-16	+06	9*	1	-16	+15	-15	+08	-09	+10		
**GA	10	1	36	373	-16	+06	9*	1	-16	+15	-15	+08	-09	+10		
18001	8	0	32	193	-16	+03	30	0	-11	+12	-12	+07	-14	+07		
18002	0	4	16	93	-15	+10	32	0	-20	+14	-09	+06	-13	+06		
**KY	8	4	48	286	-04	+03	62	0	-14	+12	-09	+07	-11	+07		
25100	2	1	12	131	-14	+08	11	0	-29	+07	-19	+00	-15	-02		
**MS	2	1	12	131	-14	+08	11	0	-29	+07	-19	+00	-15	-02		
34001	4	0	31	245	-07	+04	15	2	-14	+09	-16	+10	-16	+12	-11	+14
34002	1	0	8	49	-20	+11	8	0	-21	+05	-15	+06	-14	+05		
34003	0	1	0	0*			0*	0								
**NC	5	1	39	294	-10	+06	23	2	-17	+09	-16	+08	-15	+10	-11	+14
42001	4	1	17	76*	-14	+11	83	0	-20	+11	-11	+10	-11	+10		
**SC	4	1	17	76*	-14	+11	83	0	-20	+11	-11	+10	-11	+10		
44001	2	0	7	115	-05	+08	6	3	-11	+12	-10	+12	-09	+10	-14	+11
44002	1	0	4	27	-08	+05	8	0	-05	+04	-04	+03	-03	+01		
44003	0	1	4	24	-07	+05	8	0	-08	+09	-05	+05	-06	+11		
**TN	3	1	15	166	-01	+01	22	3	-04	+04	-02	+06	-01	+09	+00	+07
*RG04	52	15	326	5,551	-06	+05	333	15	-17	+12	-10	+10	-11	+10	-02	+08
14001	10	10	84	852	-11	+11	21	2	-17	+14	-14	+12	-13	+12	-15	+16
14003	6	3	36	266	-09	+12	13	0	-17	+14	-10	+10	-10	+11		

(continued)

TABLE D-2 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
**IL	16	13	120	1,118	-11	+11	34	2	-17	+14	-13	+11	-12	+11	-15	+16
15001	4	3	37	178	-11	+10	38	0	-12	+11	-09	+10	-07	+09		
15002	1	0	4	23	-17	+05	9	0	-18	+05	-13	+04	-13	+05		
15005	1	0	4	21	-03	+13	5	0	-05	+14	-06	+17	-05	+18		
15008	1	1	9	54	-04	+08	8	0	-06	+11	-05	+11	-03	+08		
15010	0	0	6	27	-08	+06	4	0	+03	+06	-04	+09	-05	+07		
15100	3	2	21	106	-12	+07	16	0	-10	+06	-07	+07	-09	+06		
**IN	10	6	81	409	-11	+10	80	0	-12	+11	-09	+10	-09	+10		
23001	2	7	37	241	-13	+08	12	0	-20	+09	-17	+09	-18	+10		
23002	4	4	26	111*	-16	+19	8	0	-08	+12	-08	+10	-07	+09		
**MI	6	11	63	352	-15	+12	20	0	-17	+12	-15	+11	-15	+11		
24001	3	7	35	508	-10	+09	22	2	-07	+10	-06	+09	-07	+08	+02	+04
**MN	3	7	35	508	-10	+09	22	2	-07	+10	-06	+09	-07	+08	+02	+04
36001	0	2	8	39	-01	+18	5	0	-28	+28	-26	+25	-31	+30		
36002	2	3	18	92	-10	+09	8	0	-23	+09	-27	+14	-34	+18		
36003	2	0	6	44	-11	+10	4	0	-33	+46	-30	+38	-31	+36		
36004	3	0	12	82	-13	+11	4	0	-29	+43	-30	+45	-29	+40		
36006	0	3	12	80	-12	+08	4	0	-19	+11	-10	+16	-09	+17		
36007	0	2	8	55	-09	+09	5	0	-24	+13	-13	+10	-12	+07		
36008	4	3	28	168	-08	+08	7	0	-10	+27	-06	+15	-11	+14		
36009	0	4	20	117	-18	+12	8	0	-24	+20	-13	+16	-16	+20		
36010	1	1	8	46	-16	+03	4	0	-08	+04	-12	+07	-13	+08		
36012	2	0	8	53	-08	+07	5	0	-04	+07	-04	+12	-05	+15		
36013	3	0	8	37*	-18	+18	2*	0	-34	+42	-43	+46	-42	+45		
36014	4	0	12	56*	-09	+07	8	0	-14	+14	-15	+17	-14	+17		
36015	0	3	12	153	-14	+11	4	0	-14	+03	-08	+04	-07	+02		
36016	0	2	6	40	-07	+08	5	0	-42	+58	-47	+80	-43	+77		
**OH	21	23	166	1,062	-13	+11	73	0	-25	+25	-24	+28	-25	+29		
51001	3	12	60	393	-09	+06	16	5	-07	+11	-03	+06	-05	+05	-08	+02
**WI	3	12	60	393	-09	+06	16	5	-07	+11	-03	+06	-05	+05	-08	+02
*R005	59	72	525	3,842	-12	+10	245	9	-17	+17	-16	+17	-16	+17	-08	+10
04001	1	1	8	48	-23	+16	8	0	-50	+35	-44	+35	-44	+37		
**AR	1	1	8	48	-23	+16	8	0	-50	+35	-44	+35	-44	+37		
19001	5	1	24	158	-13	+07	18	0	-11	+16	-09	+13	-08	+13		
**LA	5	1	24	158	-13	+07	18	0	-11	+16	-09	+13	-08	+13		
32001	9	0	33	180	-15	+13	41	0	-11	+13	-07	+10	-08	+09		
32002	0	1	3	5*	-12	-04	6	0	-16	-03	-17	+02	-20	+01		
**NM	9	1	36	185	-16	+13	47	0	-13	+13	-10	+10	-11	+10		
37101	4	0	12	65*	-14	+08	6	0	-17	+09	-19	+12	-17	+10		
37102	1	0	4	21	-26	+18	4	0	-09	+17	-08	+01	-14	+07		
37103	1	1	8	48	-09	+08	8	0	-14	+06	-07	+07	-05	+04		
**OK	6	1	24	134	-15	+11	18	0	-15	+09	-12	+09	-11	+07		
45001	4	4	66	2,613	-06	+05	23	4	-26	+16	-15	+07	-13	+08	-19	+12
45002	1	0	4	31	-10	+10	4	0	-15	+17	-03	+08	-03	+11		
45003	1	0	4	8*	-22	+10	3	4	-19	-05	-12	+04	+03	+04	+01	+04
45006	1	0	17	103	-13	+06	14	0	-17	-05	-16	-05	-14	-02		

(continued)

TABLE D-2 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	PRECISION NO. ANALYZERS	PRECISION NO. PRECISION CHECKS	PRECISION PROBABILITY LIMITS LOW	PRECISION PROBABILITY LIMITS UP	ACCURACY NO. AUDITS	ACCURACY NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
**TX	7	4	91	2,755	-07	+05	44	8	-23	+11	-17	+06	-15	+08	-18	+13
*R006	28	8	183	3,280	-09	+07	135	8	-21	+16	-17	+13	-16	+13	-18	+13
16002	1	1	4	23*	-09	+06	12	0	-09	+02	-06	+05	-07	+11		
16003	2	2	25	108	-11	+12	10	0	-08	+10	-07	+09	-10	+07		
**ID	3	3	29	131	-11	+11	22	0	-10	+07	-07	+06	-09	+10		
17001	0	2	8	45	-18	+07	5	0	-26	+16	-17	+12	-12	+11		
**KS	0	2	8	45	-18	+07	5	0	-26	+16	-17	+12	-12	+11		
26001	3	0	24	139	-25	+14	8	0	-22	+23	-17	+14	-22	+09		
26002	4	1	22	128	-11	+13	8	0	-22	+14	-11	+11	-14	+11		
26003	1	2	12	87	-14	+18	6	0	-08	+23	-04	+20	-08	+09		
26)04	1	1	12	72	-17	+08	6	0	-09	+05	-17	+13	-18	+09		
26005	2	0	8	54	-10	+05	6	0	-20	+10	-14	+07	-16	+03		
**MO	11	4	78	488	-18	+14	34	0	-19	+17	-14	+14	-17	+09		
28003	0	1	1	2*	-22	-09	0*	0								
**NB	0	1	1	2*	-22	-09	0*	0								
*R007	14	10	116	658	-17	+14	61	0	-17	+14	-12	+11	-14	+10		
06001	0	2	7	35*	-24	+20	7	0	-30	+13	-23	+13	-20	+06		
**CO	0	2	7	35*	-24	+20	7	0	-30	+13	-23	+13	-20	+06		
27001	2	1	12	169	-17	+09	12	12	-32	+19	-22	+11	-20	+08	-20	+06
**MT	2	1	12	169	-17	+09	12	12	-32	+19	-22	+11	-20	+08	-20	+06
35001	4	0	16	100	-08	+06	6	0	+02	+11	-02	+11	-07	+08		
**ND	4	0	16	100	-08	+06	6	0	+02	+11	-02	+11	-07	+08		
46001	4	2	24	309	-08	+06	25	13	-11	+06	-09	+07	-09	+06	-08	+07
**UT	4	2	24	309	-08	+06	25	13	-11	+06	-09	+07	-09	+06	-08	+07
*R008	10	5	59	613	-12	+09	50	23	-20	+14	-15	+11	-14	+08	-14	+09
03100	6	0	29	180	-11	+02	10	8	-21	+02	-16	+04	-07	+03	-09	+09
03200	0	1	4	0*			0*	0								
03300	1	1	3	15*	-08	+04	5	0	-05	+02	-05	+07	-07	+06		
**AZ	7	2	36	195	-11	+02	15	8	-19	+05	-15	+07	-07	+04	-09	+09
05001	22	2	76	466	-10	+11	26	0	-20	+15	-15	+09	-17	+10		
05004	7	2	36	223	-17	+06	17	3	-06	+14	-05	+12	-05	+11	-02	+03
05036	6	0	24	133	-09	+13	9	0	-15	+24	-06	+17	-04	+16		
05061	14	4	75	452	-13	+10	20	0	-14	+17	-14	+10	-17	+07		
**CA	49	8	211	1,274	-13	+11	72	3	-16	+17	-13	+13	-15	+13	-02	+03
12120	0	1	?	?	???	???	?	?	???	???	???	???	???	???		
**HI	0	1	?	?	???	???	?	?	???	???	???	???	???	???		
54100	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**GU	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
*R009	57	11	247	1,469	-13	+10	87	11	-17	+16	-13	+12	-14	+12	-07	+08
13001	3	0	8	89	-10	+07	6	8			-12	+10	-12	+69	-01	+11

(continued)

TABLE D-2 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY										
					PROBABILITY LIMITS				PROBABILITY LIMITS								
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LOW	UP	LOW	UP	LOW	UP	LOW	UP
**ID	3	0	8	89	-10	+07	6	8			-12	+10	-12	+09	-01	+11
38001	1	2	5	21*	-22	+15	7	0	-12	+05	-10	+08	-11	+06		
**OR	1	2	5	21*	-22	+15	7	0	-12	+05	-10	+08	-11	+06		
49001	8	3	38	453	-07	+08	19	4	-10	+09	-10	+10	-11	+10	-14	+11
**WA	8	3	38	453	-07	+08	19	4	-10	+09	-10	+10	-11	+10	-14	+11
*R010	12	5	51	563	-09	+08	32	12	-11	+08	-10	+10	-11	+09	-12	+12
NATION	308	214	2,286	22,863	-09	+07	1,481	84	-16	+14	-12	+12	-13	+12	-08	+10

TABLE D-3. CONTINUOUS NO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	PRECISION NO. ANALYZERS	PRECISION NO. PRECISION CHECKS	PRECISION PROBABILITY LIMITS LOW	PRECISION PROBABILITY LIMITS UP	ACCURACY NO. AUDITS	ACCURACY NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
07001	3	0	11	42*	-11	+12	5	4	-15	+12	-08	+03	-08	+02	-08	+01
**CT	3	0	11	42*	-11	+12	5	4	-15	+12	-08	+03	-08	+02	-08	+01
22001	3	2	24	198	-14	+12	7	0	-26	-02	-20	+03	-22	+07		
**MA	3	2	24	198	-14	+12	7	0	-26	-02	-20	+03	-22	+07		
30001	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**NH	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
41001	1	0	4	44	-02	+16	8	0	-05	+20	-03	+12	-03	+11		
**RI	1	0	4	44	-02	+16	8	0	-05	+20	-03	+12	-03	+11		
47001	1	0	1	5*	-13	+03	1	0								
**VT	1	0	1	5*	-13	+03	1	0								
*RG01	9	2	40	289	-13	+14	21	4	-25	+20	-16	+12	-16	+12	-08	+01
31001	6	2	32	209	-14	+13	13	0	-09	+15	-12	+08	-12	+03		
**NJ	6	2	32	209	-14	+13	13	0	-09	+15	-12	+08	-12	+03		
33001	1	4	20	97	-10	+11	59	0	-12	+14	-09	+08	-08	+07		
**NY	1	4	20	97	-10	+11	59	0	-12	+14	-09	+08	-08	+07		
*RG02	7	6	52	306	-13	+13	72	0	-11	+14	-09	+08	-09	+07		
08001	1	0	8	55	-13	+11	8	0	-10	+06	-04	+03	-02	+02		
**DE	1	0	8	55	-13	+11	8	0	-10	+06	-04	+03	-02	+02		
09001	0	2	8	47	-12	+09	4	0	-08	+11	-12	+23	-07	+11		
**DC	0	2	8	47	-12	+09	4	0	-08	+11	-12	+23	-07	+11		
21001	1	1	8	77	-09	+10	8	0	-03	+14	-04	+10	-04	+09		
21005	0	1	5	49	-08	+08	6	0	-13	+12	-03	+04	-03	+03		
**MD	1	2	13	126	-09	+09	14	0	-09	+14	-04	+08	-04	+07		
39001	5	0	76	497	-10	+11	20	0	-13	+18	-11	+12	-10	+11		
39002	0	2	8	89	-09	+09	7	0	-11	+12	-10	+07	-05	+07		
39003	1	2	12	68	-09	+09	4	0	-08	+09	-03	+03	-04	+02		
**PA	6	4	96	654	-10	+11	31	0	-12	+15	-10	+09	-08	+09		
48001	4	0	20	142	-10	+09	8	0	-07	+23	-05	+08	-04	+05		
48002	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
48003	0	0	15	87	-21	+16	15	0	-03	+04	-01	+02	-03	+02		
**VA	5	1	35	229	-15	+12	23	0	-08	+15	-04	+05	-03	+03		
50001	1	0	12	80	-10	+12	8	0	-07	+21	-04	+14	-03	+11		
50002	1	0	8	84	-08	+20	6	0	-04	+26	-05	+17	-09	+15		
**WV	2	0	20	164	-10	+17	14	0	-06	+23	-04	+15	-05	+13		
*RG03	15	8	180	1,275	-11	+12	94	0	-10	+16	-08	+11	-06	+08		

(continued)

TABLE D-3 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
					PROBABILITY LIMITS				PROBABILITY LIMITS							
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
10001	0	0	4	28	-16	+13	6	0	-51	+55	-11	+36	-20	+47		
10003	0	0	1	12	-18	+11	1	0								
10011	1	0	7	54	-16	+28	6	0	-37	+35	-16	+09	-12	+10		
10012	1	0	8	51	-09	+12	6	0	-06	+09	-02	+10	-01	+09		
10013	1	0	2	21	-14	+14	3	0	-32	-13	-23	+15	-20	+27		
10016	1	0	4	47	-18	+23	4	0	+00	+00	+06	+06	-03	+07		
10018	0	2	2	3*	-18	+18	0*	0								
10020	1	0	3	21	-29	+26	3	0	-33	-01	-27	-11	-26	-17		
**FL	5	2	31	237	-17	+21	29	0	-36	+29	-22	+23	-23	+27		
11010	0	2	6	71	-11	+13	4	0	-05	-01	-12	+08	-19	+12		
**GA	0	2	6	71	-11	+13	4	0	-05	-01	-12	+08	-19	+12		
18001	6	0	21	109	-12	+13	18	0	-15	+30	-10	+22	-16	+17		
18002	1	0	4	0*			0*	0								
**KY	7	0	25	109*	-06	+10	18	0	-15	+30	-10	+22	-16	+17		
34002	0	0	8	45	-15	+27	8	0	-16	+22	-08	+13	-11	+12		
34003	1	0	4	21	-10	+22	4	0	-35	+18	-21	+11	-11	+07		
**NC	1	0	12	66	-14	+25	12	0	-24	+22	-14	+14	-11	+10		
44002	1	0	4	27	-05	+05	8	0	-12	+12	-03	+06	-05	+05		
**TN	1	0	4	27	-04	+00	8	0	-11	+11	-03	+05	-05	+05		
*RG04	14	4	78	510	-12	+14	71	0	-24	+26	-15	+18	-17	+18		
14001	3	1	16	91	-06	+11	7	0	-08	+25	-01	+11	-03	+08		
14003	6	1	27	148	-07	+09	10	0	-13	+08	-11	+13	-13	+13		
**IL	9	2	43	239	-07	+10	17	0	-15	+18	-08	+13	-10	+12		
15001	2	0	5	22*	-11	+20	8	0	-18	+26	-08	+12	-07	+08		
15008	1	0	4	26	-12	+07	4	0	-07	+17	-05	+06	-03	+03		
**IN	3	0	9	48*	-13	+15	12	0	-14	+23	-07	+10	-06	+07		
23002	0	2	0	0*			1*	0								
**MI	0	2	0	0*			1*	0								
24001	0	2	8	113	-14	+10	4	0	-41	+40	-14	+11	+00	+00		
**MN	0	2	8	113	-14	+10	4	0	-41	+40	-14	+11	+00	+00		
36001	1	0	4	30	-08	+30	5	0	-21	+28	-10	+14	-06	+13		
36007	1	0	4	28	-12	+15	4	0	-15	+36	-11	+12	-05	+02		
36008	0	2	8	48	-11	+10	6	0	-01	+27	-17	+36	-14	+16		
36009	0	2	8	33*	-24	+24	6	0	-38	+91	-18	+23	-09	-05		
36014	1	0	4	23	-17	+16	5	0	-32	+46	-14	+18	-11	+04		
36016	1	0	0	0*			0*	0								
**OH	4	4	28	162	-17	+21	26	0	-32	+51	-14	+21	-13	+09		
51001	0	2	8	51	-09	+06	4	0	-12	+13	-06	+03	-06	+01		
**WI	0	2	8	51	-09	+06	4	0	-12	+13	-06	+03	-06	+01		
*RG05	16	12	96	613	-13	+14	64	0	-26	+35	-11	+15	-10	+09		
04001	1	0	4	32	-03	+02	6	4	-20	+00	-19	-02	-17	-04	-17	-05
**AR	1	0	4	32	-03	+02	6	4	-20	+00	-19	-02	-17	-04	-17	-05
19001	15	2	16	105*	-10	+08	15*	0	-08	+15	-08	+12	-09	+11		

(continued)

TABLE D-3 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
**LA	15	2	16	105*	-10	+08	15*	0	-08	+15	-08	+12	-09	+11		
32001	1	0	2	5*	-12	+10	3	0	+13	+15	-14	+06	-07	-04		
32002	1	0	3	5*	-12	-01	3	0	-06	-02	-08	+01	-06	+04		
**NM	2	0	5	10*	-14	+06	6	0	-15	+25	-10	+03	-09	+03		
37101	2	0	8	43	-07	+05	8	0	-24	+12	-17	+05	-15	+04		
37102	0	0	2	9	-02	+02	2	0	-07	+04	-04	+01	-01	+02		
37103	3	0	12	72	-12	+07	9	0	-13	+02	-07	+07	-04	+08		
**OK	5	0	22	124	-10	+06	19	0	-18	+07	-13	+08	-12	+09		
45001	2	2	50	2,111	-08	+07	16	0	-34	+27	-19	+17	-17	+13		
45002	1	1	8	65	-10	+15	7	0	-23	+25	-16	+13	-10	+07		
45006	2	1	13	72	-03	+05	10	0	-06	+12	-05	+04	-04	+03		
**TX	5	4	71	2,248	-08	+07	33	0	-25	+24	-15	+13	-14	+10		
*RG06	28	6	118	2.519	-09	+07	79	4	-21	+19	-14	+11	-13	+10	-17	-05
17001	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
**KS	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
26001	0	2	9	43	-47	+47	6	0	-31	+66	-18	+31	-16	+18		
26002	4	0	20	122	-10	+11	8	0	-16	+13	-08	+07	-07	+06		
26003	1	1	10	43	-33	+39	7	0	-26	+03	-13	+11	-12	+09		
26004	1	1	11	69	-16	+15	6	0	-09	+14	-09	+17	-18	+28		
26005	1	0	4	25	-18	+16	6	0	-22	+25	-25	+18	-23	+15		
**MO	7	4	54	302	-25	+25	33	0	-28	+28	-14	+16	-14	+14		
*RG07	8	4	54	302	-25	+25	33	0	-28	+28	-14	+16	-14	+14		
06001	2	2	14	50*	-35	+28	8	7	-27	+14	-17	+08	-17	+06	-14	+04
**CO	2	2	14	50*	-35	+28	8	7	-27	+14	-17	+08	-17	+06	-14	+04
35001	2	0	8	50	-08	+07	3	0	+05	+19	-02	+10	-05	+07		
**ND	2	0	8	50	-08	+07	3	0	+05	+19	-02	+10	-05	+07		
46001	4	0	12	135	-08	+10	10	0	-11	+09	-09	+05	-10	+05		
**UT	4	0	12	135	-08	+10	10	0	-11	+09	-09	+05	-10	+05		
*RG08	8	2	34	235	-17	+16	21	7	-19	+16	-13	+08	-13	+06	-14	+04
03200	0	2	0	0*			0*	0								
03300	2	0	1	8*	-05	+09	4	0	-01	+02	-01	+04	+00	+05		
**AZ	2	2	1	8*	-05	+09	4	0	-01	+02	-01	+04	+00	+05		
05901	34	0	102	550*	-13	+12	37	0	-10	+10	-16	+06	-14	+06		
05004	8	4	48	307	-06	+08	24	0	-10	+09	-08	+07	-08	+07		
05036	5	2	28	171	-11	+09	8	6	-11	+13	-06	+07	-08	+08	-09	+08
05061	15	4	83	511	-17	+12	24	0	-18	+03	-16	+04	-16	+05		
**CA	62	10	261	1,547	-13	+12	93	6	-17	+10	-14	+07	-14	+07	-09	+08
29300	0	0	6	38	-06	+06	3	2	+00	+00	-10	-07	-09	-04	-08	-01
**NV	0	0	6	38	-06	+06	3	2	+00	+00	-10	-07	-09	-04	-08	-01
*RG09	64	12	268	1,593	-13	+11	100	8	-16	+10	-14	+07	-13	+07	-10	+06
38001	1	0	4	22	-21	+14	7	0	-43	+27	-10	+13	-08	+12		

(continued)

TABLE D-3 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	PRECISION NO. ANALYZERS	PRECISION NO. PRECISION CHECKS	PRECISION PROBABILITY LIMITS LOW	PRECISION PROBABILITY LIMITS UP	ACCURACY NO. AUDITS	ACCURACY NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	PROBABILITY LIMITS LEVEL 1 UP	PROBABILITY LIMITS LEVEL 2 LOW	PROBABILITY LIMITS LEVEL 2 UP	PROBABILITY LIMITS LEVEL 3 LOW	PROBABILITY LIMITS LEVEL 3 UP	PROBABILITY LIMITS LEVEL 4 LOW	PROBABILITY LIMITS LEVEL 4 UP
**OR	1	0	4	22	-21	+14	7	0	-43	+27	-10	+13	-08	+12		
49001	0	2	4	31*	-15	+10	11	0	-18	+26	-12	+13	-08	+09		
**WA	0	2	4	31*	-15	+10	11	0	-18	+26	-12	+13	-08	+09		
*RG10	1	2	6	53*	-18	+12	18	0	-29	+29	-11	+13	-08	+10		
NATION	170	50	920	7,693	-12	+12	573	23	-20	+21	-13	+12	-12	+10	-14	+05

TABLE D-4. OZONE PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

			AUTOMATED ANALYZERS													
			PRECISION				ACCURACY									
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
07001	3	6	27	147*	-06	+10	10	0	-07	+06	-09	+07	-10	+11		
**CT	3	6	27	147*	-06	+10	10	0	-07	+06	-09	+07	-10	+11		
20001	2	0	14	190	-08	+06	15	0	-08	+09	-07	+09	-06	+08		
**ME	2	0	14	190	-08	+06	15	0	-08	+09	-07	+09	-06	+08		
22001	5	8	44	331	-12	+10	19	0	-09	+09	-07	+10	-09	+12		
**MA	5	8	44	331	-12	+10	19	0	-09	+09	-07	+10	-09	+12		
30001	3	1	14	319	-10	+06	14	0	-09	+11	-11	+09	-12	+10		
**NH	3	1	14	319	-10	+06	14	0	-09	+11	-11	+09	-12	+10		
41001	1	1	6	92	-10	+06	8	0	-05	+11	-09	+10	-08	+08		
**RI	1	1	6	92	-10	+06	8	0	-05	+11	-09	+10	-08	+08		
47001	2	0	4	34*	-05	+10	4	0	+01	+07	+01	+01	-01	+03		
**VT	2	0	4	34*	-05	+10	4	0	+01	+07	+01	+01	-01	+03		
*RG01	16	16	109	1,113	-10	+08	70	0	-08	+09	-08	+09	-09	+10		
31001	9	6	59	409	-11	+12	51	8	-07	+12	-06	+10	-09	+05		
**NJ	9	6	59	409	-11	+12	51	8	-07	+12	-06	+10	-09	+05		
33001	8	11	76	445	-11	+08	128	0	-13	+09	-13	+09	-12	+10		
**NY	8	11	76	445	-11	+08	128	0	-13	+09	-13	+09	-12	+10		
40001	0	1	?	?	???	???	?	?	???	???	???	???	???	???		
**PR	0	1	?	?	???	???	?	?	???	???	???	???	???	???		
*RG02	17	18	135	854	-11	+10	179	8	-12	+10	-11	+10	-12	+09		
08001	4	1	16	149	-07	+08	7	0	-05	+06	-08	+08	-08	+09		
**DE	4	1	16	149	-07	+08	7	0	-05	+06	-08	+08	-08	+09		
09001	1	1	8	59	-06	+09	4	0	-08	+05	-07	+05	-06	+06		
**DC	1	1	8	59	-06	+09	4	0	-08	+05	-07	+05	-06	+06		
21001	6	2	43	444	-06	+06	45	0	-10	+06	-07	+06	-07	+06		
21003	2	0	6	44	-05	+06	10	0	-05	+07	-06	+05	-05	+06		
21005	3	1	16	187	-05	+05	17	0	-14	+07	-08	+07	-06	+06		
**MD	11	3	65	675	-06	+05	72	0	-11	+07	-07	+06	-06	+06		
39001	19	8	109	710	-09	+06	27	0	-05	+08	-06	+07	-07	+06		
39002	2	2	11	121	-08	+07	14	0	-10	+07	-08	+08	-07	+09		
39003	2	1	10	55	-08	+13	4	0	+03	+09	-03	+07	-03	+04		
**PA	23	11	130	886	-09	+07	45	0	-07	+09	-06	+07	-06	+07		
48001	6	5	32	276	-07	+05	19	16	-14	+13	-08	+07	-05	+03	-05	+04
48003	4	0	16	91	-13	+11	11	0	-03	+06	-04	+04	-04	+04		
**VA	10	5	48	367	-09	+05	30	16	-11	+11	-07	+06	-05	+04	-05	+04

(continued)

TABLE D-4 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
50001	4	0	15	104	-10	+10	12	0	-07	+12	-09	+14	-11	+11		
50002	2	0	4	46	-05	+11	4	0	+00	+14	-03	+14	-05	+12		
**WV	6	0	19	150	-09	+11	16	0	-05	+14	-07	+14	-09	+12		
*RG03	55	21	286	2,286	-08	+07	174	16	-10	+09	-07	+08	-07	+07	-05	+04
01011	3	0	12	58	-12	+10	15	0	-10	+09	-06	+07	-06	+06		
01012	1	2	12	54	-09	+09	18	0	-38	+12	-19	+04	-15	-01		
01013	0	2	8	37	-18	+07	8	2	-24	+12	-09	+06	-03	+02	-02	+01
01015	0	0	4	24	-35	+32	5	0	-20	+16	-22	-01	-28	+02		
**AL	4	4	36	173	-18	+15	46	2	-28	+15	-16	+08	-16	+07	-02	+01
10001	3	0	12	88	-12	+11	8	0	-10	+08	-09	+05	-10	+06		
10003	0	1	5	60	-10	+09	6	0	-34	+30	-19	+06	-21	+06		
10005	0	0	3	15	-13	+15	6	0	-11	+03	-10	-01	-10	+00		
10011	0	2	8	95	-20	-02	10	7	-26	+08	-19	+04	-13	+04	-09	+06
10012	2	1	12	81	-06	+08	6	0	-10	+15	-07	+09	-07	+09		
10013	1	2	12	91	-08	+05	16	0	-05	+05	-03	+04	-02	+04		
10014	0	0	3	16	-44	+31	4	0	-07	+01	-13	+07	-06	+06		
10015	0	0	5	41	-07	+04	6	0	-03	+04	-07	+06	-41	+26		
10016	0	2	8	89	-19	+10	6	0	-02	+05	-03	+01	-02	+01		
10017	0	2	8	51	-05	+03	9	0	-26	+14	-24	+12	-26	+12		
10018	0	2	15	177	-03	+04	6	0	-19	+15	-10	+09	-06	+06		
10020	0	1	3	22	-18	+18	4	0	-43	-06	-31	-17	-29	-18		
**FL	6	13	94	826	-14	+10	87	7	-20	+13	-16	+10	-17	+11	-09	+06
11010	0	4	11	108	-10	+08	5	0	-09	+11	-05	+12	-03	+10		
**GA	0	4	11	108	-10	+08	5	0	-09	+11	-05	+12	-03	+10		
18001	12	0	43	207*	-11	+09	32	0	-12	+11	-11	+09	-10	+07		
18002	1	1	8	39	-16	+19	4	0	-09	+15	-08	+11	-08	+09		
**KY	13	1	51	246*	-08	+06	36	0	-11	+11	-10	+09	-10	+07		
25100	2	0	29	267	-10	+09	19	0	-05	+04	-04	+02	-07	+02		
**MS	2	0	29	267	-10	+09	19	0	-05	+04	-04	+02	-07	+02		
34001	6	0	42	253	-07	+05	26	0	-10	+10	-07	+06	-02	+04		
34002	1	0	4	32	-13	+02	4	0	-06	+04	-07	+09	-09	+09		
34003	1	2	17	78	-06	+05	18	0	-09	+08	-07	+06	-08	+07		
34004	1	0	3	19	-15	+09	2	0	-20	-04	-16	+00	-15	+04		
**NC	9	2	66	382	-08	+06	50	0	-11	+09	-08	+07	-06	+06		
42001	3	4	27	127	-07	+09	134	0	-11	+12	-08	+11	-09	+10		
**SC	3	4	27	127	-07	+09	134	0	-11	+12	-08	+11	-09	+10		
44001	1	1	15	174	-10	+12	16	0	-16	+07	-12	+04	-12	+05		
44002	0	2	6	33*	-04	+04	10	0	-05	+02	-04	+02	-03	+03		
44003	1	1	8	48	-05	+05	14	0	-20	+17	-16	+10	-14	+07		
44004	2	0	6	26*	-11	+06	6	0	-09	+06	-07	+04	-07	+06		
44005	0	2	8	59	-11	+13	15	0	-13	+07	-07	+05	-06	+06		
**TN	4	6	43	340	-11	+07	61	0	-15	+10	-10	+06	-10	+06		
*RG04	41	34	357	2,469	-11	+09	436	9	-16	+13	-12	+10	-12	+09	-08	+06
14001	17	11	116	1,094	-08	+09	30	0	-13	+15	-11	+08	-10	+07		
14003	8	1	23	150*	-09	+09	13	0	-15	+13	-08	+06	-10	+08		
**IL	25	12	139	1,244	-08	+09	43	0	-14	+14	-10	+08	-10	+07		

(continued)

TABLE D-4 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS LOW	UP	NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS LEVEL 1 LOW	UP	LEVEL 2 LOW	UP	LEVEL 3 LOW	UP	LEVEL 4 LOW	UP
15001	0	6	24	119	-10	+08	28	0	-14	+11	-08	+07	-08	+05		
15002	2	0	6	33*	-09	+08	17	0	-14	+12	-12	+11	-12	+10		
15003	0	1	3	15*	-10	+03	5	0	-10	+01	-08	+04	-07	+03		
15005	1	0	3	15*	-07	+08	7	0	-06	+09	-05	+08	-07	+09		
15008	2	0	10	39	-09	+07	8	0	-08	+01	-09	+02	-05	+02		
15010	0	0	4	15	-07	+09	6	0	-15	+12	-12	+07	-12	+06		
15100	3	0	9	43*	-12	+07	11	0	-17	+07	-13	+09	-12	+09		
**IN	8	7	59	279	-10	+08	82	0	-13	+10	-10	+08	-09	+07		
23001	4	7	39	210	-09	+04	15	0	-08	+05	-07	+04	-06	+04		
23002	3	1	16	80	-08	+06	5	0	-05	+12	+01	+04	-03	+09		
**MI	7	8	55	290	-09	+05	20	0	-08	+07	-07	+05	-06	+06		
24001	4	2	19	264	-07	+10	12	0	-12	+08	-10	+05	-07	+02		
**MN	4	2	19	264	-07	+10	12	0	-12	+08	-10	+05	-07	+02		
36001	1	2	12	59	-12	+14	5	0	-24	+09	-23	+09	-23	+09		
36002	3	0	12	56	-13	+13	4	0	-14	+13	-12	+09	-08	+08		
36003	1	0	3	17*	-20	+09	4	0	-03	+03	-04	+04	-05	+04		
36006	0	2	8	50	-05	+05	4	0	-18	+20	-05	+11	-03	+10		
36007	0	2	8	43	-14	+10	5	0	-18	+06	-06	+02	-04	+00		
36008	5	0	28	168	-10	+10	9	0	-09	+19	-13	+19	-10	+21		
36009	2	1	10	77	-12	+07	7	0	-17	+05	-08	+05	-09	+05		
36010	2	2	14	77	-10	+04	4	0	-15	+28	-11	+20	-11	+17		
36012	1	1	7	46	-10	+07	7	0	-12	+14	-08	+07	-05	+03		
36014	1	0	4	22	-12	+17	5	0	-07	+04	-03	+04	+00	+05		
36015	0	2	8	51	-08	+04	4	0	-02	+07	-03	+07	-05	+08		
36016	0	1	3	21	-08	+06	6	0	-16	+05	-09	+06	-20	+09		
**OH	16	13	117	687	-11	+09	64	0	-15	+14	-11	+11	-11	+12		
51001	15	4	59	330*	-09	+06	21	0	-10	+07	-09	+05	-08	+05		
**WI	15	4	59	330*	-09	+06	21	0	-10	+07	-09	+05	-08	+05		
*RG05	75	46	448	3,094	-09	+09	242	0	-13	+11	-10	+08	-10	+08		
04001	0	2	8	52	-03	+03	8	0	-05	+06	-06	+05	-08	+04		
**AR	0	2	8	52	-03	+03	8	0	-05	+06	-06	+05	-08	+04		
19001	9	6	50	397	-08	+06	47	0	-14	+05	-10	+07	-08	+08		
**LA	9	6	50	397	-08	+06	47	0	-14	+05	-10	+07	-08	+08		
32001	3	0	12	77	-11	+06	12	0	-07	+13	-07	+09	-07	+07		
32002	3	2	16	76*	-09	+03	10	0	-13	+08	-13	+07	-14	+08		
**NM	6	2	28	153	-10	+05	22	0	-11	+12	-10	+09	-10	+08		
37101	2	1	12	64	-09	+08	6	0	-05	+08	-08	+07	-07	+05		
37102	0	1	4	24	-10	+11	6	0	-02	+05	-02	+01	-02	+03		
37103	1	2	12	69	-11	+10	8	0	-06	+12	-08	+10	-09	+11		
**OK	3	4	28	157	-10	+10	20	0	-05	+08	-06	+07	-07	+07		
45001	8	13	86	3,466	-07	+07	31	0	-17	+11	-13	+12	-12	+15		
45002	2	1	16	135	-11	+09	18	0	-19	+11	-15	+12	-15	+12		
45006	6	0	24	153	-15	+06	24	0	-15	+09	-14	+08	-13	+05		
**TX	16	14	126	3,754	-08	+07	73	0	-17	+10	-14	+11	-14	+12		
*RG06	34	28	248	4,513	-08	+07	170	0	-14	+10	-11	+09	-11	+10		

(continued)

TABLE D-4 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION				ACCURACY									
	SLAMS	NAMS	NO. ANALYZERS	NO. PRECISION CHECKS	PROBABILITY LIMITS		NO. AUDITS	NO. AUDITS AT LEVEL 4	PROBABILITY LIMITS							
									LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
					LOW	UP			LOW	UP	LOW	UP	LOW	UP	LOW	UP
16001	1	2	11	81	-04	+04	7	0	-19	+14	-15	+12	-09	+06		
16002	2	0	8	48	-03	+05	24	0	-03	+06	-03	+03	-04	+03		
16003	1	1	4	12*	-21	+14	2	0	-05	+04	-04	+01				
**IO	4	3	23	141	-06	+07	33	0	-06	+09	-07	+06	-05	+03		
17001	1	2	12	75	-15	+23	4	0	-52	+44	-09	+08	-11	+14		
**KS	1	2	12	75	-15	+23	4	0	-52	+44	-09	+08	-11	+14		
26001	2	2	25	147	-12	+12	8	0	-13	+12	-10	+10	-09	+08		
26002	5	0	15	73*	-10	+04	5	0	-11	+27	-09	+18	-11	+19		
26003	3	1	13	68*	-14	+09	6	0	-07	+07	-06	+06	-02	+03		
26004	1	1	8	50	-08	+07	6	0	-12	+13	-06	+07	-05	+06		
26005	2	0	8	51	-08	+04	6	0	-08	+09	-07	+08	-04	+04		
**MO	13	4	69	389	-12	+09	31	0	-12	+15	-08	+10	-08	+09		
28002	1	0	?	?	???	???	?	?	???	???	???	???	???	???		
28003	1	2	11	61	-05	+08	4	0	-11	+11	-12	+10	-10	+07		
**NB	2	2	11	61*	-05	+08	4	0	-11	+11	-12	+10	-10	+07		
*RG07	20	11	115	666	-11	+11	72	0	-14	+16	-08	+08	-07	+07		
06001	7	4	44	254	-09	+12	16	0	-21	+10	-10	+04	-09	+04		
**CO	7	4	44	254	-09	+12	16	0	-21	+10	-10	+04	-09	+04		
35001	2	0	8	50	-09	+11	4	0	-08	+02	-08	+02	-06	+01		
**ND	2	0	8	50	-09	+11	4	0	-08	+02	-08	+02	-06	+01		
46001	3	2	13	192	-08	+08	18	15	-07	+09	-06	+05	-05	+05	-05	+03
**UT	3	2	13	192	-08	+08	18	15	-07	+09	-06	+05	-05	+05	-05	+03
*RG08	12	6	65	496	-09	+10	38	15	-16	+11	-08	+05	-07	+05	-05	+03
03100	3	0	9	45*	-11	+14	5	3	-09	+23	-17	+20	-14	+14	-14	+12
03200	7	2	36	177	-10	+04	9	0	-12	+06	-10	+02	-12	+02		
03300	3	2	8	42*	-06	+07	21	0	-08	+10	-03	+07	-03	+07		
**AZ	13	4	53	264*	-11	+08	35	3	-11	+13	-09	+10	-10	+09	-14	+12
05001	55	8	198	1,231	-11	+11	63	0	-18	+09	-13	+05	-12	+04		
05004	17	4	76	469	-10	+03	42	40	-11	+05	-08	+04	-07	+03	-08	+04
05036	5	2	32	192	-11	+08	8	6	-08	+06	-03	+05	-03	+05	-04	+04
05061	27	4	130	765	-16	+08	37	18	-20	+07	-09	+06	-06	+06	-07	+06
**CA	104	18	436	2,657	-13	+09	150	64	-17	+08	-10	+05	-10	+06	-07	+05
12120	0	1	?	?	???	???	?	?	???	???	???	???	???	???		
**HI	0	1	?	?	???	???	?	?	???	???	???	???	???	???		
29100	2	0	?	?	???	???	?	?	???	???	???	???	???	???		
29200	0	2	?	?	???	???	?	?	???	???	???	???	???	???		
29300	1	1	8	44	-05	+03	4	6	-01	+01	-10	+11	-17	+10	-14	+07
**NV	3	3	8	44*	-05	+03	4*	6	-01	+01	-10	+11	-17	+10	-14	+07
*RG09	120	26	497	2,965	-13	+09	189	73	-16	+09	-11	+07	-10	+06	-08	+05
38001	5	2	18	100*	-15	+03	32	0	-22	+25	-18	+16	-18	+15		
**OR	5	2	18	100*	-15	+03	32	0	-22	+25	-18	+16	-18	+15		

(continued)

TABLE D-4 (Continued)

AUTOMATED ANALYZERS

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	PRECISION NO. ANALYZERS	PRECISION NO. PRECISION CHECKS	PRECISION PROBABILITY LIMITS LOW	PRECISION PROBABILITY LIMITS UP	ACCURACY NO. AUDITS	ACCURACY NO. AUDITS AT LEVEL 4	ACCURACY PROBABILITY LIMITS LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP	LEVEL 4 LOW	LEVEL 4 UP
49001	4	5	26	266	-06	+09	16	0	-05	+10	-06	+08	-06	+05		
NNWA	4	5	26	266	-06	+09	16	0	-05	+10	-06	+08	-06	+05		
NRG10	9	7	44	366	-10	+10	48	0	-18	+21	-15	+14	-15	+13		
NATION	399	213	2,296	18,822	-10	+09	1,620	121	-14	+12	-11	+09	-10	+08	-07	+05

Explanation of Column Heading Abbreviations for Tables D-5, D-6, D-7, D-8
(Manual Methods)

Column		
No.	Heading abbreviation	Explanation
5	NO. COLL. SITES	Number of sites where two samples are samples are collocated.
6	NO. RESULTS < LIMIT	Number of paired data sets from collocated samplers with either result less than the tabulated values on Form 1: TSP: 20 $\mu g/m^3$ SO_2: 40 $\mu g/m^3$ NO_2: 30 $\mu g/m^3$ Pb: 0.15 $\mu g/m^3$ NOTE: These are not the detection limits.
9	NO. VALID COLLOCATED DATA PAIRS	Number of pairs of data from collocated sites with both valid data values above the detection limit.

Explanation of Column Heading Abbreviations for Tables D-5, D-6, D-7, D-8
(Manual Methods)

Column		
No.	Heading abbreviation	Explanation
5	NO. COLL. SITES	Number of sites where two samples are samples are collocated.
6	NO. RESULTS < LIMIT	Number of paired data sets from collocated samplers with either result less than the tabulated values on Form 1: TSP: 20 $\mu g/m^3$ SO_2: 40 $\mu g/m^3$ NO_2: 30 $\mu g/m^3$ Pb: 0.15 $\mu g/m^3$ NOTE: These are not the detection limits.
9	NO. VALID COLLOCATED DATA PAIRS	Number of pairs of data from collocated sites with both valid data values above the detection limit.

TABLE D-5. TSP PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

			MANUAL METHODS										
			PRECISION						ACCURACY				
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMITS LEVEL 1 LOW	PROBABILITY LIMITS LEVEL 1 UP	PROBABILITY LIMITS LEVEL 2 LOW	PROBABILITY LIMITS LEVEL 2 UP
07001	18	22	155	12	7	-12	+10	166	58			-07	+05
**CT	18	22	155	12	7	-12	+10	166	58			-07	+05
20001	10	1	40	16	5	-09	+13	232	76			-06	+07
**ME	10	1	40	16	5	-09	+13	232	76			-06	+07
22001	4	17	84	8	1	-15	+13	106	96			-14	+09
**MA	4	17	84	8	1	-15	+13	106	96			-14	+09
30001	11	1	57	8	3	-12	+11	118	35			-06	+03
**NH	11	1	57	8	3	-12	+11	118	35			-06	+03
41001	5	6	48	8	2	-09	+10	103	55			-07	+07
**RI	5	6	48	8	2	-09	+10	103	55			-07	+07
47001	5	1	24	8	1	-05	+07	103	35			-01	+04
**VT	5	1	24	8	1	-05	+07	103	35			-01	+04
*RG01	53	48	408	60	19	-11	+12	828	355			-09	+07
31001	22	9	123	8	0	-31	+30	104	48			-11	+08
**NJ	22	9	123	8	0	-31	+30	104	48			-11	+08
33001	72	25	397	31	11	-14	+12	429	150			-03	+06
**NY	72	25	397	31	11	-14	+12	429	150			-03	+06
40001	7	7	56	8	1	-08	+08	92	53			-06	+08
**PR	7	7	56	8	1	-08	+08	92	53			-06	+08
55001	5	0	15	12	24	-23	+26	120	0*				
**VI	5	0	15	12	24	-23	+26	120	0*				
*RG02	106	41	591	59	36	-19	+19	745	251			-06	+08
08001	0	3	41	8	2	-07	+09	106	11			-12	+11
**DE	0	3	41	8	2	-07	+09	106	11			-12	+11
09001	2	4	27	8	0	-13	+03	113	17			-04	+10
**DC	2	4	27	8	0	-13	+03	113	17			-04	+10
21001	10	6	85	8	0	-06	+06	115	31			-12	+11
21002	5	0	19	8	8	-08	+07	105	10			-12	+15
21003	1	1	14	8	2	-12	+13	101	14			-13	+24
21005	2	1	16	5	1	-07	+10	69	9			-08	+11
21006	1	1	14	8	6	-07	+06	116	6			-06	+09
**MD	19	9	148	37	17	-08	+08	506	70			-12	+15
39001	43	33	384	11	2	-08	+12	149	126			-08	+09
39002	14	7	79	12	11	-10	+09	160	113			-09	+06
39003	9	4	55	11	0	-11	+12	122	15			-06	+07
**PA	66	44	518	34	13	-10	+11	431	254			-08	+08

(continued)

TABLE D-5 (Continued)

MANUAL METHODS

			PRECISION						ACCURACY				
REP.ORG./ STATE/ REGION	NO. SITES		NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS		NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMI			
	SLAMS	NAMS				LOW	UP			LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP
48001	20	14	213	12	5	-07	+06	164	61			-07	+08
48002	1	1	8	8	2	-06	+05	109	8			-01	+03
48003	6	0	57	8	2	-08	+06	114	20			-08	+03
48005	1	2	9	6	5	-17	+14	75	10			-03	+04
**VA	28	17	287	34	14	-09	+08	462	99			-07	+07
50001	13	7	60	8	5	-04	+06	112	16*			-07	+04
50002	6	4	40	8	2	-09	+12	113	16			-04	+05
**WV	19	11	100	16	7	-07	+09	225	32			-06	+05
*RG03	134	88	1,121	137	53	-09	+09	1,843	483			-09	+09
01011	26	4	172	8	3	-20	+15	96	41			-05	+08
01012	8	6	52	8	3	-12	+12	93	450			-04	+03
01013	3	3	20	8	2	-24	+25	87	8			-06	+00
01014	7	1	40	8	17	-14	+17	153	11			-02	+11
01015	9	0	48	8	0	-10	+12	117	12			-14	+08
01016	0	0	25	4	11	-09	+17	51	9			-04	+03
**AL	53	14	357	44	36	-16	+17	597	531			-05	+05
10001	9	0	44	8	15	-27	+30	84	16			-10	+09
10002	5	0	27	8	2	-15	+12	106	9			-09	+06
10003	5	0	20	8	12	-14	+16	105	22			-08	+07
10004	11	0	32	8	2	-12	+18	104	16			-09	+12
10005	2	0	28	8	16	-07	+08	117	19			-07	+09
10006	2	0	28	8	1	-14	+13	108	14			-04	+07
10007	2	0	20	8	19	-10	+06	112	10			-07	+08
10011	7	4	84	12	3	-15	+24	146	75			-06	+09
10012	11	4	72	8	0	-10	+16	113	76			-12	+07
10013	4	2	28	8	5	-20	+08	116	35			-04	+01
10014	2	0	32	8	6	-21	+13	83	10			-11	+15
10015	2	0	16	5	0	-09	+07	60	6			-05	+02
10016	8	0	40	8	6	-09	+13	106	16			-07	+05
10017	8	2	48	12	3	-07	+09	170	14			-04	+07
10018	9	3	52	8	0	-20	+13	105	74			-07	+14
10020	4	1	20	8	0	-06	+12	105	6			-06	+03
**FL	91	16	591	133	90	-15	+16	1,740	418			-09	+10
11010	39	11	192	16	1	-10	+10	221	48*			-07	+08
**GA	39	11	192	16	1	-10	+10	221	48*			-07	+08
18001	40	6	254	32	19	-19	+15	468	183			-06	+12
18002	9	6	60	8	2	-13	+17	115	17			-11	+27
**KY	49	12	314	40	21	-17	+15	583	200			-07	+14
25100	19	4	86	12	3	-11	+14	165	26			-09	+10
**MS	19	4	86	12	3	-11	+14	165	26			-09	+10
34001	50	4	188	32	26	-08	+09	331	202			-06	+06
34002	8	2	40	8	3	-08	+08	112	17			-08	+04
34003	11	2	52	8	6	-16	+11	119	24			-02	+10
34004	5	1	24	8	3	-14	+28	115	8			-03	+06
**NC	74	9	304	56	38	-12	+14	677	251			-06	+07
42001	10	8	95	16	10	-08	+09	201	253			-04	+05
**SC	10	8	95	16	10	-08	+09	201	253			-04	+05

(continued)

TABLE D-5 (Continued)

			MANUAL METHODS										
			PRECISION						ACCURACY				
REP.ORG./ STATE/ REGION	NO. SITES		NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS		NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMITS			
	SLAMS	NAMS				LOW	UP			LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP
44001	22	3	166	12	9	-08	+05	179	207			-05	+11
44002	4	6	40	8	0	-17	+19	97	90			-07	+04
44003	7	6	60	8	0	-04	+05	117	90			-03	+04
44004	7	2	22	8	0	-07	+08	104	18			-11	+08
44005	7	4	52	8	0	-10	+10	121	47			-05	+06
**TN	47	21	340	44	9	-10	+10	618	452			-06	+08
*RG04	382	95	2,279	361	208	-14	+14	4,802	2,179			-07	+08
14001	49	21	295	16	9	-11	+13	229	89			-05	+10
14002	9	4	68	8	0	-13	+10	99	26			-05	+06
14003	15	1	68	7	1	-18	+13	92	20			-12	+06
**IL	73	26	431	31	10	-13	+13	420	135			-07	+10
15001	17	8	152	8	7	-14	+08	107	28			-06	+04
15002	3	4	24	8	9	-11	+10	111	34			-04	+06
15003	7	2	32	8	26	-09	+11	103	28			-05	+04
15005	10	1	32	8	10	-15	+14	89	36			-03	+03
15008	16	2	60	8	4	-09	+18	107	19			-03	+06
15009	7	0	10	4	4	-08	+08	29*	4*			-03	+03
15010	8	0	40	8	22	-12	+18	100	28			-04	+07
15100	19	3	88	12	2	-12	+25	149	27			-04	+06
**IN	87	20	438	64	84	-13	+17	795	204			-04	+05
23001	38	16	256	16	33	-10	+09	208	59			-05	+05
23002	14	5	25	4	0	-20	+27	52	15*			-10	+09
**MI	52	21	281	20	33	-13	+14	260	74			-06	+06
24001	32	12	16	8	3	-08	+09	118	65			-04	+05
**MN	32	12	16	8	3	-08	+09	118	65			-04	+05
36001	10	5	64	8	7	-15	+17	109	17			-09	+06
36002	8	3	35	6	24	-12	+15	71	6*			-13	+10
36003	17	2	72	11	6	-08	+09	82	19			-14	+06
36004	18	0	72	8	0	-07	+08	79	21			-10	+07
36005	5	0	24	8	12	-38	+48	109	10			-10	+12
36006	9	4	52	8	1	-07	+09	103	17			-02	+03
36007	7	5	46	9	1	-06	+11	125	14			-04	+10
36008	22	7	112	8	0	-11	+14	117	34			-12	+08
36009	17	4	64	5	0	-32	+26	0*	17*			-14	+12
36010	13	7	100	8	8	-16	+07	65*	28			-09	+06
36012	11	1	33	8	11	-15	+20	97	10*			-12	+05
36013	17	1	71	8	8	-10	+04	114	18			-14	+11
36014	20	1	6	6	30	-14	+16	75	12*			-16	+02
36015	9	3	24	8	6	-04	+10	108	17			-10	+08
36016	10	4	60	8	8	-09	+09	56*	18			-07	+10
**OH	193	47	835	117	122	-17	+18	1,310	258			-11	+08
51001	58	16	16	8	13	-06	+08	105	84			-06	+06
**WI	58	16	16	8	13	-06	+08	105	84			-06	+06
*RG05	495	142	2,017	248	265	-15	+16	3,008	820			-08	+08
04002	23	3	114	11	81	-21	+14	146	116			-06	+06
**AR	23	3	114	11	81	-21	+14	146	116			-06	+06

(continued)

TABLE D-5 (Continued)

REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NO. SITES NAMS	MANUAL METHODS PRECISION NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. VALID COLLOCATED DATA PAIRS	ACCURACY NO. AUDITS	PROBABILITY LIMI LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP
19001	22	7	120	8	4	-14	+19	104	28*			-07	+09
**LA	22	7	120	8	4	-14	+19	104	28*			-07	+09
32001	40	0	151	15	12	-10	+13	199	155			-07	+07
32002	7	4	44	12	0	-19	+13	162	15			-12	+09
**NM	47	4	195	27	12	-15	+14	361	170			-07	+07
37101	8	2	40	8	3	-18	+12	98	10			-10	+11
37102	6	3	48	8	2	-11	+11	115	21			-05	+06
37103	5	3	40	8	0	-06	+07	118	22			-11	+04
**OK	19	8	128	24	5	-12	+11	331	53			-09	+07
45001	12	31	314	16	2	-10	+22	229	460			-08	+07
45002	2	4	133	11	2	-13	+12	126	131			-09	+05
45003	7	1	74	8	0	-12	+13	102	86			-06	+10
45004	2	2	28	8	0	-12	+25	85	16			-18	+15
45005	3	0	36	8	3	-11	+09	92	45			-06	+08
45006	4	5	88	8	5	-14	+20	112	68			-08	+09
45007	1	2	21	8	0	-04	+02	120	29			-03	+02
**TX	31	45	694	67	12	-13	+17	866	835			-08	+08
*RG06	142	67	1,251	137	114	-14	+16	1,808	1,202			-08	+07
16001	5	3	60	8	2	-09	+12	104	16			-04	+05
16002	2	3	26	8	4	-09	+08	0*	22			-08	+01
16003	29	8	157	10	3	-25	+19	114	51			-09	+17
**ID	36	14	243	26	9	-16	+15	218	89			-11	+13
17001	12	8	80	11	19	-11	+65	160	22			-20	+20
**KS	12	8	80	11	19	-11	+65	160	22			-20	+20
26001	11	3	7	7	6	-25	+38	0*	19			-19	+23
26002	2	3	9	9	3	-30	+34	0*	11			-12	+10
26003	5	3	8	8	0	-11	+17	0*	11			-06	+06
26004	4	3	8	8	0	-09	+11	0*	9			-04	+01
26005	6	2	8	8	3	-04	+03	0*	13			-04	+03
26006	0	0	0	0	0			0	9			-12	+04
26007	0	0	0	0	0			0	10			-06	+09
**MO	28	14	40	40	12	-20	+24	0*	82			-12	+12
28001	19	0	88	11	10	-08	+15	98	22			-10	+10
28002	2	3	24	8	0	-10	+13	83	6			-05	+05
28003	9	3	76	8	5	-09	+05	116	22			-04	+03
**NB	30	6	188	27	15	-10	+12	297	50			-07	+07
*RG07	106	42	551	104	55	-22	+30	675*	243			-12	+13
06001	39	12	184	8	0	-20	+12	125	208			-07	+07
**CO	39	12	184	8	0	-20	+12	125	208			-07	+07
27001	18	1	22	11	7	-14	+09	201	64			-05	+02
27002	3	0	8	4	2	-04	+10	58	9			-10	+09
27003	2	1	8	4	10	-16	+09	58	12			-04	+05
27004	3	0	8	4	6	-10	+12	98	26			-08	+05
**MT	26	2	46	23	25	-13	+11	415	111			-06	+04
35001	18	1	67	8	14	-21	+26	116	20			-04	+05

(continued)

TABLE D-5 (Continued)

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY				
						PROBABILITY LIMITS				PROBABILITY LIMITS			
										LEVEL 1		LEVEL 2	
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LOW	UP	LOW	UP
**ND	18	1	67	8	14	-21	+26	116	20			-04	+05
43001	21	2	92	8	18	-08	+16	87	113			-03	+03
**SD	21	2	92	8	18	-08	+16	87	113			-03	+03
46001	6	8	62	8	0	-14	+05	106	66			-08	+06
**UT	6	8	62	8	0	-14	+05	106	66			-08	+06
52001	8	1	43	12	29	-09	+12	139	20			-07	+04
**WY	8	1	43	12	29	-09	+12	139	20			-07	+04
*RG08	118	26	494	67	86	-16	+14	988	538			-06	+06
03100	20	0	62	6	0	-15	+05	76	18*			-17	+13
03200	4	4	40	8	0	-14	+08	107	55			-10	+13
03300	7	3	16	8	0	-15	+22	83	12			-14	+13
**AZ	31	7	118	22	0	-17	+15	266	85			-12	+13
05001	61	22	320	29	1	-12	+08	387	87			-13	+09
05004	3	9	60	8	1	-10	+04	121	40			-07	+06
05036	4	3	28	8	0	-03	+08	114	10			-03	+09
05061	15	10	130	12	0	-15	+17	161	37			-11	+06
**CA	83	44	538	57	2	-12	+11	783	174			-11	+08
12120	5	4	23	4	6	-08	+10	49	0*				
**HI	5	4	23	4	6	-08	+10	49	0*				
29100	12	0	52	6	4	-35	+48	73	18			-32	+44
29200	3	2	?	?	?	???	???	?	?			???	???
29300	4	5	37	8	0	-04	+04	45*	23			-02	+08
**NV	19	7	89	14	4	-27	+33	118*	41			-21	+30
54100	4	0	?	?	?	???	???	?	?			???	???
**GU	4	0	?	?	?	???	???	?	?			???	???
*RG09	142	62	768	97	12	-16	+15	1,216	306			-14	+14
02020	12	2	25	8	19	-10	+08	90	8*			-05	+04
**AK	12	2	25	8	19	-10	+08	90	8*			-05	+04
13001	18	2	79	12	5	-11	+14	132	74			-06	+10
**ID	18	2	79	12	5	-11	+14	132	74			-06	+10
38001	21	9	120	23	7	-10	+09	327	318			-04	+05
**OR	21	9	120	23	7	-10	+09	327	318			-04	+05
49001	23	12	117	11	0	-08	+23	0*	49			-11	+12
**WA	23	12	117	11	0	-08	+23	0*	49			-11	+12
*RG10	74	25	341	54	31	-12	+15	549	449			-06	+07
NATION	1752	636	9,821	1,324	879	-15	+16	16,462	6,820			-08	+08

TABLE D-5. PB PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

			MANUAL METHODS										
			PRECISION						ACCURACY				
										PROBABILITY LIMITS			
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP
07001	18	2	80	9	0	-09	+06	27	21	-10	+07	-08	+06
**CT	18	2	80	9	0	-09	+06	27	21	-10	+07	-08	+06
20001	2	0	4	2	5	-07	+08	21	23	-13	+10	-07	+03
**ME	2	0	4	2	5	-07	+08	21	23	-13	+10	-07	+03
22001	2	4	24	4	2	-11	+10	54	12	-03	+04	-13	+10
**MA	2	4	24	4	2	-11	+10	54	12	-03	+04	-13	+10
30001	6	0	18	4	9	-08	+13	18	15	-20	+25	-03	+12
**NH	6	0	18	4	9	-08	+13	18	15	-20	+25	-03	+12
41001	2	2	16	4	1	-10	+16	47	24	-14	+11	-07	+08
**RI	2	2	16	4	1	-10	+16	47	24	-14	+11	-07	+08
*RG01	30	8	142	23	17	-10	+12	167	95	-14	+12	-09	+09
31001	8	2	38	4	16	-17	+23	45	24	+01	+08	+02	+05
**NJ	8	2	38	4	16	-17	+23	45	24	+01	+08	+02	+05
33001	7	6	54	0	12	-09	+09	57	12*	-02	+10	-11	+09
**NY	7	6	54	0	12	-09	+09	57	12*	-02	+10	-11	+09
40001	2	3	17	4	2	-05	+07	60	25	-14	+10	-07	+10
**PR	2	3	17	4	2	-05	+07	60	25	-14	+10	-07	+10
*RG02	17	11	109	8	30	-12	+15	162	61	-08	+12	-06	+09
08001	0	0	8	4	24	-10	+09	43	8	-21	+14	-09	+09
**DE	0	0	8	4	24	-10	+09	43	8	-21	+14	-09	+09
09001	0	2	8	4	22	-18	+10	55	12	-08	+05	-04	-02
**DC	0	2	8	4	22	-18	+10	55	12	-08	+05	-04	-02
21001	4	2	24	8	99	-09	+09	115	53	-10	+02	-08	+00
**MD	4	2	24	8	99	-09	+09	115	53	-10	+02	-08	+00
39001	9	0	72	1	0	-15	+13	60	28	-11	+08	-10	+04
39002	1	2	49	9	106	-17	+22	13	46	-20	-03	-20	+05
39003	3	2	20	4	6	-16	+14	59	12	-07	+07	-06	+06
**PA	13	4	141	14	112	-16	+14	132	86	-20	+06	-17	+06
48001	0	2	5	2	21	-13	+20	8	16	-19	+12	-10	+04
48003	2	0	24	4	40	-17	+13	20	25	-03	+04	-01	+03
**VA	2	2	29	6	61	-16	+16	28	41	-12	+09	-07	+05
50001	12	0	103	8	85	-12	+17	113	61	-06	+07	-09	+03
**WV	12	0	103	8	85	-12	+17	113	61	-06	+07	-09	+03
*RG03	31	10	313	44	403	-14	+13	486	261	-15	+08	-12	+05

(continued)

TABLE D-5 (Continued)

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY				
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	PROBABILITY LIMITS UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMIT LEVEL 1 LOW	PROBABILITY LIMIT LEVEL 1 UP	PROBABILITY LIMIT LEVEL 2 LOW	PROBABILITY LIMIT LEVEL 2 UP
01011	1	0	4	3	1	-13	+17	53	22	-18	+11	-06	+03
01012	2	2	12	5	9	-08	+07	36	20	-08	+01	-02	+02
**AL	3	2	16	8	10	-11	+14	89	42	-14	+07	-05	+03
10011	0	2	8	4	3	-13	+10	55	12	-14	+20	-03	+04
10012	0	0	28	0	29	-26	+28	113	13	-17	+18	-03	+05
10013	0	0	8	0	0	-14	+13	50	12	-11	+13	-06	+06
10017	0	2	16	2	30	-29	+13	44	12	-10	+07	-06	+04
10018	0	2	39	0	4	-18	+11	38	11	-06	+07	-05	+04
**FL	0	6	99	6	66	-23	+20	300	60	-13	+14	-05	+05
11010	0	2	4	3	5	-06	+05	12	11	-06	+05	-05	+03
**GA	0	2	4	3	5	-06	+05	12	11	-06	+05	-05	+03
18001	5	0	20	4	9	-36	+52	12	12	-18	+13	-12	+02
18002	0	2	3	0	3	-05	+05	9	12	-03	+04	-04	+04
**KY	5	2	23	4	12	-29	+38	21	24	-12	+10	-10	+05
25100	4	0	20	0	24	-24	+23	27	24	-04	+05	-03	+04
**MS	4	0	20	0	24	-24	+23	27	24	-04	+05	-03	+04
42001	0	0	44	12	57	-06	+09	25	24	-24	+12	-10	+12
**SC	0	0	44	12	57	-06	+09	25	24	-24	+12	-10	+12
44001	1	0	3	0	7	-26	+19	12	9	-16	+06	-09	+05
44002	0	2	8	0	0	-17	+16	57	14	-16	+08	-14	+09
44003	0	0	60	8	14	-03	+05	85	61	-05	+03	-02	+01
**TN	1	2	71	8	21	-12	+13	154	84	-10	+06	-06	+04
*RG04	13	14	277	41	195	-19	+19	628	269	-13	+10	-07	+05
14001	8	0	24	3	0	-16	+16	44	9	-04	+08	-06	+06
14002	2	1	68	4	10	-11	+12	41	12	-03	+04	-03	+04
14003	0	1	68	5	9	-18	+21	55	12	-02	+06	-05	+04
**IL	10	2	160	12	19	-15	+17	140	33	-03	+06	-05	+04
15001	4	0	12	3	22	-27	+17	17	28	-12	+05	-13	+06
15008	1	2	20	4	18	-19	+22	31	29	-06	+02	-15	+05
15010	0	0	8	4	30	-52	+36	16	28	-12	+05	-13	+06
15100	5	2	60	4	54	-24	+25	68	28	-12	+05	-13	+06
**IN	10	4	100	15	124	-20	+26	132	113	-11	+05	-14	+06
23001	9	0	36	8	5	-14	+11	37	26	-11	+05	-08	+03
23002	6	2	4	4	2	-10	+13	55	24	-04	+07	-01	+02
**MI	15	2	40	12	7	-12	+12	92	50	-09	+07	-06	+04
24001	7	2	4	4	7	-14	+11	9	11	-08	+12	-04	+06
**MN	7	2	4	4	7	-14	+11	9	11	-08	+12	-04	+06
36001	0	2	6	0	4	-06	+02	16	15	-09	+05	-09	+04
36005	0	0	5	0	4	-06	+02	16	15	-09	+07	-09	+04
36006	0	2	6	0	3	-06	+02	16	15	-06	+04	-09	+04
36008	0	2	6	0	4	-06	+02	16	15	-09	+05	-09	+04
36009	0	2	6	0	10	-06	+02	16	15	-09	+05	-09	+04
36010	0	2	6	0	4	-06	+02	16	15	-09	+05	-09	+04
**OH	0	10	35	0	29	-06	+02	96	90	-09	+05	-09	+04

(continued)

TABLE D-5 (Continued)

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY				
						PROBABILITY LIMITS				PROBABILITY LIMITS			
										LEVEL 1		LEVEL 2	
	SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LOW	UP	LOW	UP
51001	0	2	10	4	39	-07	+05	22	24	-07	+08	-02	+06
**WI	0	2	10	4	39	-07	+05	22	24	-07	+08	-02	+06
*RG05	42	22	349	47	225	-18	+17	491	321	-09	+07	-10	+06
04002	2	0	8	3	77	-13	+17	98	25	-05	+15	-09	+06
**AR	2	0	8	3	77	-13	+17	98	25	-05	+15	-09	+06
19001	2	2	16	4	40	-19	+24	55	23	-09	+12	-03	+07
**LA	2	2	16	4	40	-19	+24	55	23	-09	+12	-03	+07
32001	2	0	8	6	33	-10	+11	88	20	-08	+06	-05	+07
32002	0	2	8	4	1	-23	+12	52	17	-09	+05	-05	+07
**NM	2	2	16	10	34	-16	+13	140	37	-08	+06	-05	+07
37101	0	1	3	0	12	-26	+20	15	9	-12	+10	-13	+03
37102	1	1	8	2	14	-23	+25	48	12	-04	+04	-06	+08
37103	2	0	8	0	12	-12	+16	60	28	-03	+05	-05	+04
**OK	3	2	19	2	38	-19	+21	123	49	-06	+06	-08	+06
45001	9	6	104	80	26	-18	+34	82	12*	-21	+24	-09	+25
45002	1	2	12	0	46	-21	+24	288	24	-09	+10	-09	+07
45003	7	1	32	4	0	-06	+07	60	24	-09	+03	-10	+06
45006	0	1	8	4	33	-35	+36	33	18	-12	+11	-06	+03
**TX	17	10	156	88	105	-21	+26	463	78	-13	+12	-12	+12
*RG06	26	16	215	107	294	-19	+22	879	212	-10	+11	-09	+09
16003	2	0	6	6	18	-15	+13	12	12	-05	+01	-06	+02
**IO	2	0	6	6	18	-15	+13	12	12	-05	+01	-06	+02
17001	1	1	8	4	33	-23	+38	37	24	-13	+11	-11	-02
**KS	1	1	8	4	33	-23	+38	37	24	-13	+11	-11	-02
26001	1	0	4	0	0	-13	+09	0	12	-11	+01	-09	-03
26002	0	2	3	2	7	-25	+38	8	19	-04	+04	-03	+04
26003	1	0	?	?	?	???	???	?	?	???	???	???	???
26004	1	1	4	4	0	-34	+38	0	20	-21	+07	-12	+05
26006	2	0	4	0	3	-20	+16	0	26	-09	+06	-10	+04
26007	1	0	4	0	0	-28	+28	0	67	-12	+18	-07	+18
**MO	6	3	19	6	10	-26	+26	8	144	-14	+14	-12	+14
28003	2	2	28	4	27	-05	+05	60	16	-13	-01	-08	+07
**NB	2	2	28	4	27	-05	+05	60	16	-13	-01	-08	+07
*RG07	11	6	61	20	88	-24	+25	117	196	-14	+12	-13	+12
08001	5	2	44	4	0	-08	+11	12	16	-10	+10	-09	+15
**CO	5	2	44	4	0	-08	+11	12	16	-10	+10	-09	+15
27001	7	0	8	4	2	-31	+19	110	25	-06	+03	-06	+03
**MT	7	0	8	4	2	-31	+19	110	25	-06	+03	-06	+03
46001	3	2	15	3	15	-27	+20	44	10	-07	+14	-16	+10
**UT	3	2	15	3	15	-27	+20	44	10	-07	+14	-16	+10
*RG08	15	4	67	11	17	-29	+19	166	51	-09	+09	-12	+12

(continued)

TABLE D-5 (Continued)

			MANUAL METHODS										
			PRECISION						ACCURACY				
										PROBABILITY LIMITS			
REP.ORG./ STATE/ REGION	NO. SITES SLAMS	NAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LEVEL 1 LOW	UP	LEVEL 2 LOW	UP
03100	9	0	33	4	1	-06	+07	38	28	-07	+01	-05	+03
03200	7	2	2	2	1	-06	+09	29	9	-02	+09	-02	+06
03300	2	0	4	0	0	-05	+06	41	12	-05	+09	+01	+02
**AZ	18	2	39	6	2	-06	+07	108	49	-08	+07	-05	+05
05001	29	2	123	11	26	-11	+16	112	32			-14	+09
05004	9	4	4	4	17	-09	+08	29	12*	-14	+06	-03	+01
05036	1	2	?	?	?	???	???	?	?	???	???	???	???
05061	20	3	130	0	17	-12	+13	55	12*	-06	+09	-06	+06
**CA	59	11	257	15	60	-11	+14	196	56*	-12	+09	-11	+08
12120	0	2	3	1	10	-47	+87	10	2			-09	+09
**HI	0	2	3	1	10	-47	+87	10	2			-09	+09
29300	1	0	?	?	?	???	???	?	?	???	???	???	???
**NV	1	0	?	?	?	???	???	?	?	???	???	???	???
*RG09	78	15	299	22	72	-15	+18	314	107	-09	+08	-09	+07
02020	2	0	14	8	3	+00	+00	4	9	-02	+10	-11	+15
**AK	2	0	14	8	3	+00	+00	4	9	-02	+10	-11	+15
13001	5	0	19	4	38	-19	+17	61	12	-13	+14	-14	+09
**ID	5	0	19	4	38	-19	+17	61	12	-13	+14	-14	+09
38001	11	2	52	4	0	-03	+05	12	12*	-01	+08	-01	+08
**OR	11	2	52	4	0	-03	+05	12	12*	-01	+08	-01	+08
49001	7	2	27	6	0	-05	+15	21	10	-10	+07	-06	+05
**WA	7	2	27	6	0	-05	+15	21	10	-10	+07	-06	+05
*RG10	25	4	112	22	41	-11	+14	98	43	-09	+11	-10	+11
NATION	288	110	1,944	345	1,382	-18	+19	3,508	1,616	-12	+10	-10	+08

TABLE D-7. MANUAL SO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

			MANUAL METHODS												
			PRECISION						ACCURACY						
REP.ORG./ STATE/ REGION	NO. SITES		NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	PROBABILITY LIMITS		NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	PROBABILITY LIMITS					
										LEVEL 1		LEVEL 2		LEVEL	
	SLAMS	NAMS				LOW	UP			LOW	UP	LOW	UP	LOW	U
10001	1	0	24	8	107	-38	+37	111	12	-14	+12	-09	+04	-09	+0
10004	0	0	6	2	15	-33	+31	15	7	-37	+42	-05	+14	-07	+1
10012	0	0	28	8	38	-52	+27	43	31	-13	+10	-10	+07	-07	+0
10014	0	0	14	4	11	-32	+32	12	34	-27	+06	-25	+06	-25	+0
10017	0	0	0	0	0			0	61	-46	+13	-18	+04	-22	+0
**FL	1	0	72	22	171	-42	+35	181	145	-36	+17	-19	+08	-20	+0
*RG04	1	0	72	22	171	-42	+35	181	145	-36	+17	-19	+08	-20	+0
32001	1	0	0	0	0			0	0*						
**NM	1	0	?	?	?	???	???	?	?	???	???	???	???	???	???
*RG06	1	0	?	?	?	???	???	?	?	???	???	???	???	???	???
12120	4	0	8	2	4	-43	+29	4	29	-07	+03	-02	+03	-02	+01
**HI	4	0	8	2	4	-43	+29	4	29	-07	+03	-02	+03	-02	+01
54100	3	0	?	?	?	???	???	?	?	???	???	???	???	???	???
**GU	3	0	?	?	?	???	???	?	?	???	???	???	???	???	???
*RG09	7	0	8	2	4	-43	+29	4	29	-07	+03	-02	+03	-02	+01
NATION	9	0	80	24	175	-42	+35	185	174	-33	+17	-18	+09	-19	+0

TABLE D-8. MANUAL NO_2 PRECISION AND ACCURACY ANNUAL VALUES FOR REPORTING ORGANIZATIONS

MANUAL METHODS

REP.ORG./ STATE/ REGION	NO. SITES		PRECISION						ACCURACY						
						PROBABILITY LIMITS				PROBABILITY LIMITS					
										LEVEL 1		LEVEL 2		LEVEL 3	
	SLAMS	HAMS	NO. SAMPLERS	NO. COLL. SITES	NO. RESULTS <LIMIT	LOW	UP	NO. VALID COLLOCATED DATA PAIRS	NO. AUDITS	LOW	UP	LOW	UP	LOW	UP
10001	0	0	18	6	61	-51	+65	62	7	-03	+03	-04	+07	-06	+06
10012	0	0	20	8	40	-15	+17	87	30	-05	+04	-04	+04	-03	+04
10017	0	0	20	8	51	-05	+07	120	61	-08	+12	-03	+06	-03	+05
**FL	0	0	58	22	152	-28	+32	269	98	-07	+10	-04	+06	-03	+05
*RG04	0	0	58	22	152	-28	+32	269	98	-07	+10	-04	+06	-03	+05
14002	0	0	32	8	5	-16	+18	100	23	-06	+06	-02	+04	-02	+05
**IL	0	0	32	8	5	-16	+18	100	23	-06	+06	-02	+04	-02	+05
*RG05	0	0	32	8	5	-16	+18	100	23	-06	+06	-02	+04	-02	+05
19001	13	0	52	8	37	-28	+25	100	31	-03	+03	-02	+02	-01	+02
**LA	13	0	52	8	37	-28	+25	100	31	-03	+03	-02	+02	-01	+02
*RG06	13	0	52	8	37	-28	+25	100	31	-03	+03	-02	+02	-01	+02
16002	0	0	2	2	3	-40	+42	0	9	-09	+06	-06	+05	-07	+07
**ID	0	0	2	2	3	-40	+42	0	9	-09	+06	-06	+05	-07	+07
*RG07	0	0	2	2	3	-40	+42	0	9	-09	+06	-06	+05	-07	+07
NATION	13	0	144	40	197	-27	+29	469	161	-07	+08	-03	+05	-03	+05

APPENDIX E

PROBLEMS INVOLVED IN THE COMPARISON OF PERFORMANCE AUDIT (PA) DATA AND PRECISION AND ACCURACY (PARS) DATA

Several problems are encountered when attempting to compare Performance Audit (PA) data and Precision and Accuracy (PARS) data. Obviously, comparisons can be made only where the same pollutant measurement methods are audited in both programs. The following pollutant measurement methods are audited in both programs.

Continuous Methods	CO
	SO_2
Manual Methods	TSP
	Pb
	SO_2
	NO_2

Further, only the accuracies of the PARS system can be compared because no precision assessments are currently made from the PA data.

Other factors to consider in making comparisons are:

1. source of data (organization performing the audits),
2. time of audit, and
3. concentration level (or flow rate level for TSP).

Valid comparisons can only be made for those organizations where both the PA and the PARS audits are performed. The PARS data are reported by Reporting Organization, whereas the PA data are reported by Laboratory.

A cross-reference listing has been prepared to match up each Reporting Organization number with its corresponding Laboratory number. The comparisons made on a state, regional, or national basis are made using only those Reporting Organization-Laboratory match-ups where both have reported accuracy audit data.

Good agreement should be expected between the PARS and PA data for a given Reporting Organization-Laboratory combination if the two audits were performed at nearly the same time. However, the PA audits are scheduled at various times during the year. And, the regulation requirement for the PARS accuracy audit is that (1) at least one audit per year shall be conducted on each instrument (or site) for continuous instruments (CO and SO_2) and for the TSP method and (2) at least two audits per quarter shall be conducted at the laboratory for the manual Pb, SO_2, and NO_2 methods. Further, there is no requirement or planned schedules to assure that the two types of audits are conducted at nearly the same time. The comparisons can therefore be made only on an annual basis for a given Reporting Organization-Laboratory matchup. Comparisons for the continuous methods, CO and SO_2, and TSP cannot be made on an individual site (instrument) basis because the PARS data are not reported on a site basis although the PA data are. (Beginning January 1, 1987, these PARS data will be reported to EMSL by site so that it will be possible to make comparisons on a site basis. However, because of the possible large differences in times of the audits, such comparisons may not be meaningful.)

Because of the relatively small amount of data for comparison on a Reporting Organization-Laboratory basis and the time differences, study of the comparisons of PA and PARS data has been limited to comparisons of larger samples or aggregates of data, i.e., on a Regional or National basis.

Another bothersome problem in comparing PA and PARS data is that the concentration levels do not correspond. The concentration levels are fixed by regulation for the PARS accuracy audits whereas the levels for PA vary from year to year and in some cases from audit to audit. Because of these variations in concentration for the PA audits, the concentration levels for PARS are used as a basis for defining concentration ranges for comparison.

The following tables present the concentration levels for PARS as specified by the regulation and the concentration levels actually used for PA audits during calendar year 1985.

TABLE E-1. CONCENTRATION LEVELS FOR PARS AND PA AUDITS FOR 1985 FOR THE CONTINUOUS METHODS

Pollutant	Concentration levels, ppm PARS	 PA
CO	3- 8	6.70
	15-20	16.50
	35-45	39.90
	80-90	
SO_2	.03-.08	.05-.08
	.15-.20	.17-.20
	.35-.45	.22-.26
	.80-.90	.40-.49
		.62-.69

TABLE E-2. CONCENTRATION (OR FLOW) LEVELS FOR PARS AND PA AUDITS FOR 1985 FOR MANUAL METHODS

Pollutant	Concentration (or flow) levels PARS		PA		
TSP	ft^3/min	m^{3}min	m^3/min	ft^3/min	
	50	1.416*	.7	24.7	
	(nominal)		.9	31.8	
	40-60	1.133-1.699	1.1	38.8	
			1.2	42.4	
			1.3	45.9	
Pb	μg/strip	μg/m^3	1/85 μg/m^3	7/85 μg/m^3	
	100- 300	0.6-1.8*	0.53	0.45	
	600-1000	3.5-5.9	1.06	1.00	
			3.03	1.15	
			4.31	2.00	
			4.83	2.70	
			6.65	5.40	
SO_2	μg/ml	ppm	μg/m^3	ppm	
	0.2-0.3	.013-.020*	44.30	.017	
	0.5-0.6	.033-.040	61.00	.023	
	0.8-0.9	.053-.059	90.60	.034	
			124.50	.0473	
			271.90	.103	
NO_2	μg/ml	ppm	μg/ml	μg/m^3	ppm
	0.2-0.3	.018-.028*	.345	59.90	.032
	0.5-0.6	.046-.055	.434	75.35	.040
	0.8-0.9	.074-.083	.686	119.10	.063
			.944	163.89	.087
			1.114	193.40	.103

*See conversion factors on following page.

Conversion Factors

To convert	Multiply by
ft^3 to m^3	0.02832
$\mu g/m^3$ to ppm	
SO_2	0.00038
NO_2	0.00053
CO	0.00087
O_3	0.00051
μg/strip to $\mu g/m^3$ for Pb	0.00589

$$\left[\frac{\mu g}{3/4"\times 8"\ \text{strip}} \cdot \frac{12\ \text{exposed strips}}{8"\times 10"\ \text{filter}} \cdot \frac{1}{50\ ft^3/\text{min}} \cdot \frac{1\ \text{filter/day}}{1440\ \text{min/day}} \cdot \frac{1}{.02832\ m^3/ft^3} = .00589\ \mu g/m^3\right]$$

$\mu g/ml$ to $\mu g/m^3$	173.61

$$\left[\frac{\mu g}{ml} \cdot \frac{50\ ml}{\text{sample}} \cdot \frac{1\ \text{sample/day}}{.2\ L/\text{min}} \cdot \frac{1}{1440\ \text{min/day}} \cdot \frac{1000\ L}{m^3}\right]$$

$$= 173.61\ \mu g/m^3$$

$\mu g/ml$ to ppm

SO_2 $(173.61)(0.00038) = 0.066$

NO_2 $(173.61)(0.00053) = 0.092$

The following example illustrates the procedure for establishing the concentration ranges for comparison purposes. For CO the four accuracy audit levels for the PARS are 3-8, 15-20, 35-45, and 80-90 ppm. During 1985 the three concentration levels for the performance audits were 6.70, 16.50, and 39.90 ppm. The calculated midpoints between the adjacent concentration levels for the PARS are considered the boundaries of the ranges for comparison:

Comparison levels	Conc. levels, ppm	Calculated midpoints, ppm	Ranges for comparison, ppm	Performance audit levels, ppm
1	3-8		0-11.5	6.70
		11.5		
2	15-20		11.5-27.5	16.50
		27.5		
3	35-45		27.5-62.5	39.90
		62.5		
4	80-90		62.5-	

As shown above the calculated midpoint between 8, the upper limit of PARS level 1, and 15, the lower limit of PARS level 2, is

$$\frac{8 + 15}{2} \text{ or } 11.5.$$

Similarly the calculated midpoint between comparison levels 2 and 3 is 27.5 ppm, and between levels 3 and 4, 62.5 ppm. Thus, the newly defined CO ranges for comparison are

0 to 11.5
11.5 to 27.5
27.5 to 62.5
and 62.5 and above.

Therefore, the results of PA audits at 6.70 ppm are compared with the results of PARS audits at 3 to 8 ppm, etc., shown in the above table.

Following the same procedure, the comparison ranges for all the pollutant methods have been computed and are summarized in Tables E-3 and E-4.

The problem in comparing results within the defined ranges are illustrated by Figures E-1 and E-2.

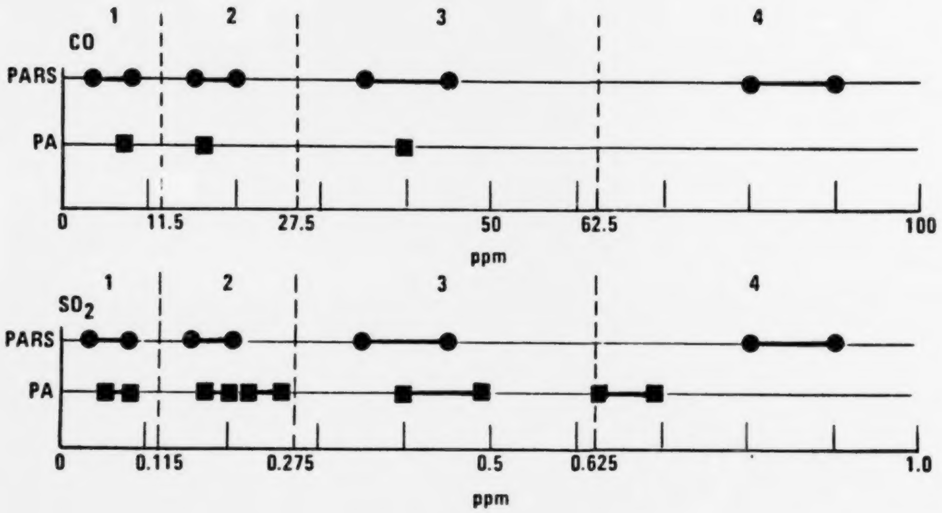


Figure E-1. Concentration levels for comparing PARS and PA data, continuous methods.

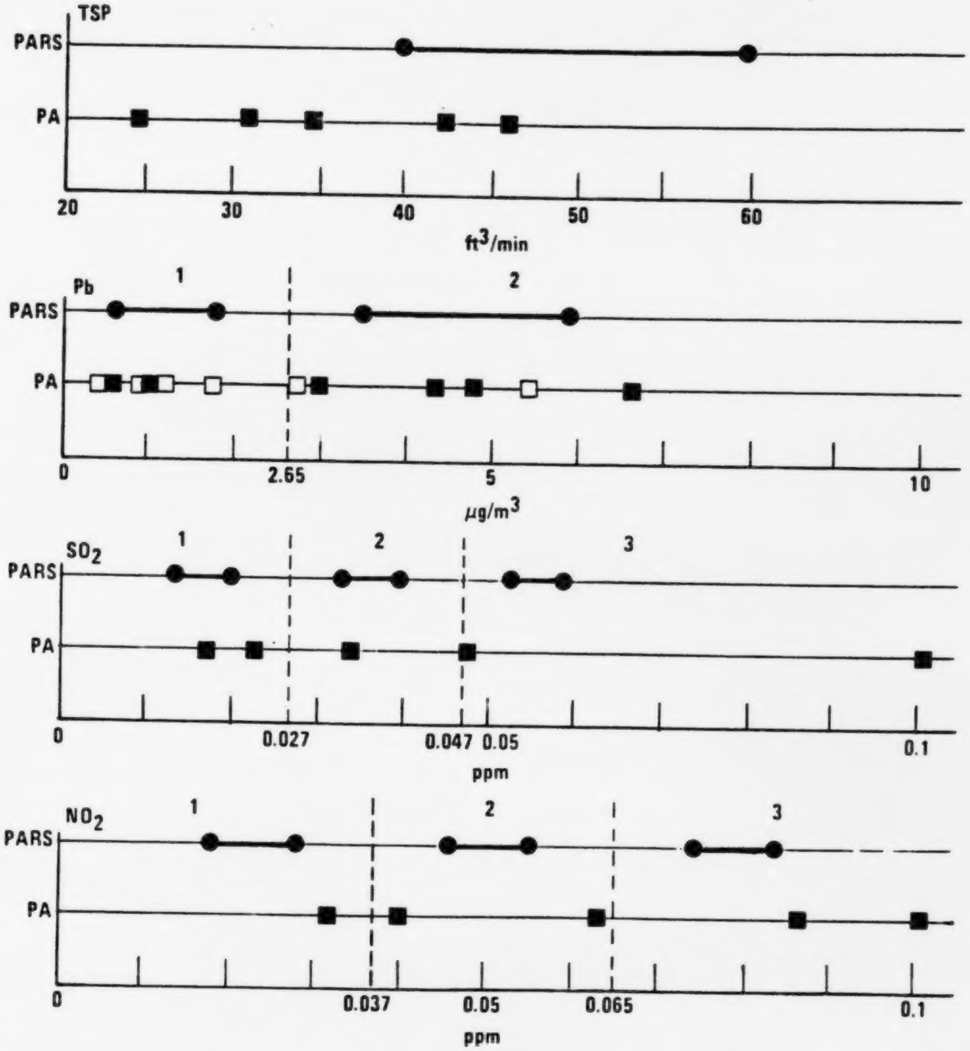


Figure E-2. Concentration or flow levels for comparing PARS and PA data, manual methods.

TABLE E-3. CONCENTRATION RANGES FOR COMPARISON OF PARS AND PA DATA - CONTINUOUS METHODS

Pollutant	Comparison level	PARS conc. levels, ppm	Calculated midpoints, ppm	Ranges for comparison, ppm	PA levels, ppm
CO	1	3-8		0-11.5	6.70
			11.5		
	2	15-20		11.5-27.5	16.50
			27.5		
	3	35-45		27.5-62.5	39.90
			62.5		
	4	80-90		62.5-	
SO_2	1	.03-.08		0-.115	.05-.08
			.115		
	2	.15-.20		.115-.275	.17-.20 .22-.26
			.275		
	3	.35-.45		.275-.625	.40-.49
			.625		
	4	.80-.90		.625-	

TABLE E-4. RANGES FOR COMPARISON OF PARS AND PA DATA - MANUAL METHODS

Pollutant	Comparison level	PARS level	Calculated mid-point	Ranges for comparison	Performance audit levels	
		ft^3/min				
TSP	2	40-60	NA	all	24.7 31.8 38.8 42.4 45.9	
		µg/m^3				
					1/85	7/85
Pb	1	0.6-1.8		0-2.65	.53 1.06	.45 1.00 1.15 2.00
			2.65			
	2	3.5-5.9		2.65-	3.03 4.31 4.83 6.65	2.70 5.40
		ppm				
SO_2	1	.013-.020		0-.027	.017 .023	
			.027			
	2	.033-.040		.027-.047	.034	
			.047			
	3	.053-.059		.047-	.0473 .103	
NO_2	1	.018-.028		0-.037	.032	
			.037			
	2	.046-.055		.037-.065	.040 .063	
			.065			
	3	.074-.083		.065-	.087 .103	

As shown in Table E-3, the results of level 2 PARS continuous SO_2 accuracy audits at concentrations .15-.20 ppm are compared with the results of performance audits at concentration levels .17-.20 and .22-.26 ppm.

And, from Table E-4, the results of level 1 PARS Pb accuracy audits at concentrations 0.6-1.8 $\mu g/m^3$ are compared with the results of performance audits at concentration levels .53 and 1.06 $\mu g/m^3$ of the 1/85 audit and .45, 1.00, 1.15, and 2.00 $\mu g/m^3$ of the 7/85 audit.

It has been recommended that the concentration levels for the performance audits be adjusted to more closely correspond to those of the PARS in order to provide more valid comparisons.

Another factor which makes the PA and PARS comparisons somewhat complicated is the reporting units which differ for some of the pollutant measurement methods and which require the conversion of units. Further, the persons submitting data are required to convert some informational items to computer codes: methods, units, laboratory names/addresses, reporting organization names/addresses, audit levels (for PARS only), etc. These conversions could be the source of some errors in proper identification of the data used in making the comparisons.

APPENDIX F

COMPARISONS OF PARS AND PERFORMANCE AUDIT DATA

NOTE: For Tables F-1 and F-2, the number of audits listed for both PA and PARS consider each individual audit at each level as a separate audit. For example, consider CO for Connecticut, Reporting Organization 07001. Table E-1 lists 3 audits for PA and 6 audits for PARS. The 6 audits for PARS could have been 2 audits at level 1, 2 at level 2, and 2 at level 3, or some other combination totalling 6 audits.

TABLE F-1. PARS AND PA DATA FOR CO, PB, TSP, NO_2 (MANUAL) AND SO_2 (MANUAL) METHODS

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985            PAGE NO.     1


REGION  01  STATE  07  CONNECTICUT                 REP ORG  001  LAB  306001

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        3        +1    +1
   PARS      (   6)  (  -6)( +14)  (  -5)(  +5)  (  -2)(  +3)

I11101 HIV       5                     -9    +5
   PARS      (  58)                (  -7)(  +5)

I12128 LEAD     12       -11    +6     -6    +3
   PARS      (  21)  ( -10)(  +7)  (  -8)(  +6)


REGION  01  STATE  20  MAINE                       REP ORG  001  LAB  301001

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        3        +7    +7     +5    +5      +5    +5
   PARS      (   4)  (  -2)( +10)  (  -7)( +11)  ( -10)( +11)

I11101 HIV      54                     -5    +4
   PARS      (  76)                (  -6)(  +7)

I12128 LEAD      6        -2    +3    -12    +5
   PARS      (  23)  ( -13)( +10)  (  -7)(  +3)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.    2


REGION  01  STATE  22  MASSACHUSETTS             REP ORG  001  LAB  304001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    28                      -7    +6
   PARS     (  96)                 ( -14)(  +9)

I12128 LEAD   12       -5   +10      -19    +5
   PARS     (  12)  (  -3)(  +4)  ( -13)( +10)


REGION  01  STATE  30  NEW HAMPSHIRE             REP ORG  001  LAB  302001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    29                      -2    +1
   PARS     (  35)                 (  -6)(  +3)

I12128 LEAD    6       +8   +29       -6    +4
   PARS     (  15)  ( -20)( +25)  (  -3)( +12)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985         PAGE NO.    3


REGION  01  STATE  41  RHODE ISLAND              REP ORG  001  LAB  305001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO        6       -3     +5      +0     +3      -1     +1
   PARS      (  11)  (  -1)(  +6)  (  -3)(  +2)  (  -3)(  +3)

I11101 HIV      28                     -11     +9
   PARS      (  55)                (  -7)(  +7)

I12128 LEAD     12       -7     +7     -10     +3
   PARS      (  24)  ( -14)( +11)  (  -7)(  +8)


REGION  01  STATE  47  VERMONT                   REP ORG  001  LAB  303001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO        3       +5     +5      +3     +3      +3     +3
   PARS      (   4)  ( -11)(  +9)  (  -7)(  +7)  (  -6)( +10)

I11101 HIV      42                      -8     +6
   PARS      (  35)                (  -1)(  +4)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985            PAGE NO.     4


REGION  02  STATE  31  NEW JERSEY               REP ORG  001  LAB  308001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      24       -3    +2      +0    +5      +2    +7
   PARS     (  28)  (  -8)( +13)  (  -4)( +10)  (  -8)( +10)

I12128 LEAD    12      -15   +10      -9    +6
   PARS     (  24)  (  +1)(  +8)  (  +2)(  +5)


REGION  02  STATE  33  NEW YORK                 REP ORG  001  LAB  307001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       6                     -1    +4      -2    +4
   PARS     (  69)  ( -11)( +10)  (  -6)(  +6)  (  -3)(  +3)

I11101 HIV     73                    -12   +21
   PARS     ( 150)                (  -3)(  +6)

I12128 LEAD    12      -10   +26     -14   +19
   PARS     (  12)  (  -2)( +10)  ( -11)(  +9)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985          PAGE NO.    5


REGION  02  STATE  40  PUERTO RICO                 REP ORG  001  LAB  309001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      6       -1    +1      -3    +3      -2    +6
   PARS     (   7)  (  -5)( +10)  (  -8)(  +9)  (  -8)( +10)

I11101 HIV    29                     -6    +9
   PARS     (  53)                (  -6)(  +8)

I12128 LEAD   12       -6    +6      -3    +3
   PARS     (  25)  ( -14)( +10)  (  -7)( +10)


REGION  02  STATE  55  VIRGIN ISLANDS              REP ORG  001  LAB  310001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985          PAGE NO.    6


REGION  03  STATE  08  DELAWARE                      REP ORG  001  LAB  313002
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW    UP

C42101 CO       6      -12    +9      -3    +2      -1    +1
   PARS      (   8)  (  -7)( +16)  (  -7)(  +8)  (  -4)(  +8)

I11101 HIV     28                     -9   +12
   PARS      (  11)                (-12)( +11)

I12128 LEAD    12      -19   +12      -8    -3
   PARS      (   8)  ( -21)( +14)  (  -9)(  +9)


REGION  03  STATE  09  DISTRICT OF COLUMBIA      REP ORG  001  LAB  312100
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW    UP

               ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

               COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985          PAGE NO.    7


REGION  03  STATE  21  MARYLAND                        REP ORG  001  LAB  312001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO     15       -9   +10      -3    +5      -1    +5
   PARS     (  24)  (  -7)(  +8)  (  -6)(  +4)  (  -5)(  +4)

I12128 LEAD   12      -24   +17      -7    +5
   PARS     (  53)  ( -10)(  +2)  (  -8)(  +0)


REGION  03  STATE  21  MARYLAND                        REP ORG  002  LAB  312001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    64                     -7    +8
   PARS     (  10)                ( -12)( +15)
```

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985          PAGE NO.    8


REGION  03  STATE  21  MARYLAND                      REP ORG  003  LAB  412004

                             ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     32                      -11   +16
   PARS      (  14)                 ( -13)( +24)


REGION  03  STATE  21  MARYLAND                      REP ORG  005  LAB  412002

                             ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     30                       -4    +6
   PARS      (   9)                 (  -8)( +11)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.    9


REGION  03  STATE  21  MARYLAND                   REP ORG  006  LAB  412006

                      ---------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW   UP      LOW   UP      LOW   UP      LOW   UP

I11101 HIV     32                    -7  +10
   PARS     (   6)                (  -6)(  +9)


REGION  03  STATE  39  PENNSYLVANIA               REP ORG  001  LAB  311002

                      ---------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW   UP      LOW   UP      LOW   UP      LOW   UP

C42101 CO      18      -8    +3     -11    +3     -11    +4
   PARS     (  24)  ( -15)(  +8)  ( -12)(  +4)  ( -12)(  +5)

I11101 HIV     35                    -6    +8
   PARS     ( 126)                (  -8)(  +9)

I12128 LEAD    12     -20    +6     -10    +7
   PARS     (  28)  ( -11)(  +8)  ( -10)(  +4)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.   10


REGION  03  STATE  39  PENNSYLVANIA              REP ORG  002  LAB  411002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW     UP    LOW    UP     LOW    UP

I11101 HIV     39                    -6     +7
   PARS      ( 113)               (  -9)(  +6)


REGION  03  STATE  39  PENNSYLVANIA              REP ORG  003  LAB  411001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW     UP    LOW    UP     LOW    UP

I11101 HIV     31                    -4     +3
   PARS      (  15)               (  -6)(  +7)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   11


REGION  03  STATE  48  VIRGINIA                    REP ORG  001  LAB  315001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      18      -4    +4      -3    +1      -2    +1
   PARS     (   8)  (  -5)(  +4)  (  -7)(  +3)  (  -7)(  +3)

I11101 HIV     32                    -4    +5
   PARS     (  61)                (  -7)(  +8)

I12128 LEAD    12     -31   +33     -12   +11
   PARS     (  16)  ( -19)( +12)  ( -10)(  +4)


REGION  03  STATE  48  VIRGINIA                    REP ORG  002  LAB  415005

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985            PAGE NO.   12


REGION  03  STATE  48  VIRGINIA                         REP ORG  003  LAB  415004

                       ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO       15      -13    -11     -15    -10     -13    -11
   PARS      (  13)  (  -4)(  +4)  (  -3)(  +5)  (  -3)(  +9)

I11101 HIV      40                     -5     +4
   PARS      (  20)                (  -8)(  +3)

I12128 LEAD     12       -8    +11      -6     +1
   PARS      (  25)  (  -3)(  +4)  (  -1)(  +3)


REGION  03  STATE  48  VIRGINIA                         REP ORG  005  LAB  415001

                       ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

I11101 HIV      30                     -5     +8
   PARS      (  10)                (  -3)(  +4)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   13


REGION  03  STATE  50  WEST VIRGINIA            REP ORG  001  LAB  314001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        6     -19    +9      -7   +10      -2    +5
   PARS      (   3)  ( -10)(  +3)  (  -4)(  +0)  (  -8)(  -2)

I42401 SO2       5     -24   -24     -19   +13      +2    +2      +3    +3
   PARS      (  24)  ( -12)(  +8)  (  -7)(  +8)  (  -8)(  +7)  (  -7)(  +5)

I11101 HIV      30                    -6    +8
   PARS      (  16)                (  -7)(  +4)

I12128 LEAD     12      -3    +8     -10    +5
   PARS      (  61)  (  -6)(  +7)  (  -9)(  +3)


REGION  03  STATE  50  WEST VIRGINIA            REP ORG  002  LAB  314002

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      35                    -6    +9
   PARS      (  16)                (  -4)(  +5)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985           PAGE NO.   14


REGION  04  STATE  01  ALABAMA                         REP ORG  011  LAB  319001
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     29                      -2     +3
   PARS     (  41)                  (  -5)(  +8)

I12128 LEAD    12        -7     +5     -12    +2
   PARS     (  22)  ( -18)( +11)  (  -6)(  +3)


REGION  04  STATE  01  ALABAMA                         REP ORG  012  LAB  419001
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      12        -9     +9      -5    +5      -6    +10
   PARS     (  20)  ( -19)( +12)  ( -16)( +10)  ( -17)( +12)

I11101 HIV     38                      -6    +13
   PARS     ( 450)                  (  -4)(  +3)

I12128 LEAD    12        -9     +6      -1    +2
   PARS     (  20)  (  -8)(  +1)  (  -2)(  +2)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   15


REGION  04  STATE  01  ALABAMA                    REP ORG  013  LAB  319001

                      ---------------PROBABILITY LIMITS---------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  01  ALABAMA                    REP ORG  014  LAB  419004

                      ---------------PROBABILITY LIMITS---------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     28                    -5    +6
   PARS     (  11)              (    -2)( +11)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   16

REGION  04  STATE  01  ALABAMA                          REP ORG  015  LAB  419005
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     29                     -4     +5
   PARS      (  12)                ( -14)(   +8)


REGION  04  STATE  10  FLORIDA                          REP ORG  001  LAB  323005
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I42401 SO2      5      +12    +12    -13    +27    +13    +13
   PARS      (   6)  ( -34)( +27)  ( -17)( +12)  ( -12)( +13)    +6     +6

I42602 NO2      5                     +2     +2     -2     +1
   PARS      (   6)  ( -51)( +55)  ( -11)( +36)  ( -20)( +47)

I11101 HIV     29                     -7     +8
   PARS      (  16)                ( -10)(   +9)

I42401 SO2      5      +12    +12    -13    +27    +13    +13
   PARS      (  12)  ( -14)( +12)  (  -9)(  +4)  (  -9)(  +3)    +6     +6

I42602 NO2      5                     +2     +2     -2     +1
   PARS      (   7)  (  -3)(  +3)  (  -4)(  +7)  (  -6)(  +6)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                 COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985        PAGE NO.   17

REGION  04  STATE  10  FLORIDA                        REP ORG  002  LAB  323003

                        ----------------PROBABILITY LIMITS-----------------
POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    35                    -10   +17
   PARS    (   9)                 (  -9)(  +6)

REGION  04  STATE  10  FLORIDA                        REP ORG  003  LAB  323004

                        ----------------PROBABILITY LIMITS-----------------
POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV    31                     -5    +8
   PARS    (  22)                 (  -8)(  +7)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86             DATA SELECTED FOR YEAR 1985          PAGE NO.   18


REGION  04  STATE  10  FLORIDA                     REP ORG  004  LAB  323008

                           ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS       LEVEL 1       LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP     LOW    UP      LOW    UP      LOW    UP

I42401 SO2      5                    -13   +19       -4    -4       +1    +1
   PARS     (    6)  ( -16)( +27)  (  -5)( +22)  (  +1)( +18)

I42401 SO2      5                    -13   +19       -4    -4       +1    +1
   PARS     (    7)  ( -37)( +42)  (  -5)( +14)  (  -7)( +13)


REGION  04  STATE  10  FLORIDA                     REP ORG  005  LAB  323002

                           ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS       LEVEL 1       LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP     LOW    UP      LOW    UP      LOW    UP

I11101 HIV     33                     -7   +11
   PARS     (   19)                (  -7)(  +9)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   19


REGION  04  STATE  10  FLORIDA                    REP ORG  006  LAB  323006

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     35                    -6   +10
   PARS     (  14)                (  -4)(  +7)


REGION  04  STATE  10  FLORIDA                    REP ORG  007  LAB  323010

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     27                    -3    +4
   PARS     (  10)                (  -7)(  +8)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   20


REGION  04  STATE  10  FLORIDA                     REP ORG  011  LAB  423003

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     47                    -5    +9
   PARS     (  75)                (  -6)(  +9)


REGION  04  STATE  10  FLORIDA                     REP ORG  012  LAB  423004

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     38                    -8   +16
   PARS     (  76)                ( -12)(  +7)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985         PAGE NO.   21


REGION  04  STATE  10  FLORIDA                      REP ORG  013  LAB  423016

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO       9       -2     +5      -5     +1      -5     +1
   PARS     (   19)  ( -15)( +11)  ( -10)(  +5)  (  -8)(  +6)

I11101 HIV     36                      -9    +17
   PARS     (   35)                (  -4)(  +1)

I12128 LEAD    12      -15    +15      -2     +5
   PARS     (   12)  ( -11)( +13)  (  -6)(  +6)


REGION  04  STATE  10  FLORIDA                      REP ORG  014  LAB  423005

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

          ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985          PAGE NO.   22


REGION  04  STATE  10  FLORIDA                        REP ORG  015  LAB  423015

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP     LOW    UP      LOW    UP      LOW    UP

I11101 HIV     28                   -10    +9
   PARS     (   6)                (  -5)(  +2)


REGION  04  STATE  10  FLORIDA                        REP ORG  016  LAB  423008

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP     LOW    UP      LOW    UP      LOW    UP

C42101 CO       3      -7    -7      -9    -9
   PARS     (   6)  ( -20)( +21)  ( -13)( +10)  ( -12)(  +8)

I11101 HIV     31                    -5    +8
   PARS     (  16)                (  -7)(  +5)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   23


REGION  04  STATE  10  FLORIDA                        REP ORG  017  LAB  423001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    38                     -9   +16
   PARS     (  14)              (  -4)(  +7)


REGION  04  STATE  10  FLORIDA                        REP ORG  018  LAB  423002

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    31                     -8   +11
   PARS     (  74)              (  -7)( +14)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   24

REGION  04  STATE  11  GEORGIA                      REP ORG  010  LAB  321001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6        -7    -6       -6    -2       -3    +2
   PARS     (   6)  ( -30)(   -6)  ( -12)(   +3)  (   -7)(  +5)

I42602 NO2      5                      +7    +7       -5    +6
   PARS     (   4)  (   -5)(  -1)  ( -12)(   +8)  ( -19)( +12)

I11101 HIV     30                      -5    +8
   PARS     (  48)                 (   -7)(  +8)

I12128 LEAD    12        -6   +10       -6    +4
   PARS     (  11)  (   -6)(  +5)  (   -5)(  +3)


REGION  04  STATE  18  KENTUCKY                     REP ORG  001  LAB  316001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     43                     -21   +33
   PARS     ( 183)                 (   -6)( +12)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.   25


REGION  04  STATE  18  KENTUCKY                      REP ORG  002  LAB  416001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       12       -9    +0      -5    +7      -3    +7
   PARS      (   5)  ( -17)(  +6)  (  -9)(  +7)  (  -7)(  +5)

I11101 HIV      32                     -8   +13
   PARS      (  17)                ( -11)( +27)

I12128 LEAD     12       -4   +12     -11   +11
   PARS      (  12)  (  -3)(  +4)  (  -4)(  +4)


REGION  04  STATE  25  MISSISSIPPI                   REP ORG  100  LAB  322001

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        3       +3    +3      +2    +2
   PARS      (   4)  (  -8)(  +4)  (  -4)(  +0)  ( -11)(  +4)

I12128 LEAD      6      -13   +10     -14    -6
   PARS      (  24)  (  -4)(  +5)  (  -3)(  +4)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                    DATA SELECTED FOR YEAR 1985          PAGE NO.   26


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  001  LAB  318001

                     ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      12       -3     +4      -5     +2      -4     +0
   PARS     (  18)  (  -8)(   +6)  (  -6)(   +6)  (  -5)(   +5)

I11101 HIV     84                      -9    +19
   PARS     ( 202)                 (  -6)(   +6)


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  002  LAB  418003

                     ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6       +0     +4      +0     +5      -5     +8
   PARS     (   8)  (  -6)(  +13)  (  -5)(   +8)  (  -4)(   +6)

I11101 HIV     31                      -8    +12
   PARS     (  17)                 (  -8)(   +4)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   27


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  003  LAB  418006

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       15       -4     +4      +0     +1      -1     +1
   PARS      (  23)  (  -7)(  +6)  (  -2)(  +6)  (  -1)(  +4)

I11101 HIV      41                      -5    +10
   PARS      (  24)                (  -2)( +10)


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  004  LAB  418008

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      31                      -3     +2
   PARS      (   8)                (  -3)(  +6)
                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        5       +1     +1     -10     +7      +2     +3
   PARS      (   5)  ( -11)( +14)  (  -4)(  +8)  (  -2)(  +8)

I11101 HIV      45                      -5     +6
   PARS      (  17)                (  -2)(  +3)


REGION  05  STATE  36  OHIO                      REP ORG  007  LAB  427002

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      29                      -3     +3
   PARS      (  14)                (  -4)( +10)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985            PAGE NO.   28


REGION  04  STATE  42  SOUTH CAROLINA             REP ORG  001  LAB  320001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       9       -1    +1       -3    +6       -1    +0
   PARS     (  52)  ( -18)( +13)  ( -11)(  +7)  ( -10)(  +5)

I11101 HIV     31                      -8   +12
   PARS     ( 253)                (  -4)(  +5)

I12128 LEAD    12       -5    +9       -6    +5
   PARS     (  24)  ( -24)( +12)  ( -10)( +12)


REGION  04  STATE  44  TENNESSEE                  REP ORG  001  LAB  317001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP
 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     51                     -15   +13
  PARS      (  34)                ( -12)(  +8)


REGION  05  STATE  36  OHIO                       REP ORG  009  LAB  427004

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

                ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   29


REGION  04  STATE  44  TENNESSEE                  REP ORG  002  LAB  417004
                       ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     31                    -4    +6
   PARS     (  90)                (  -7)(  +4)


REGION  04  STATE  44  TENNESSEE                  REP ORG  003  LAB  417003
                       ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     41                    -6   +14
   PARS     (  90)                (  -3)(  +4)


 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     28                    -5    +6
   PARS     (  28)                (  -9)(  +6)


REGION  05  STATE  36  OHIO                       REP ORG  012  LAB  427007
                       ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       3     -14   -14      -3    -3      -1    -1
   PARS     (   5)  (  -4)( +18)  (  +0)(  +5)  (  -5)(  +6)

I11101 HIV     37                   -11    +6
   PARS     (  10)                ( -12)(  +5)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   30

REGION  04  STATE  44  TENNESSEE                      REP ORG  004  LAB  417002

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     30                      -6    +9
   PARS     (  18)                  ( -11)(  +8)

REGION  04  STATE  44  TENNESSEE                      REP ORG  005  LAB  417001

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

               ** DATA FOR COMPARISON WAS UNAVAILABLE **


                         ----------------PROB

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     33                      -6    +9
   PARS     (  18)                  ( -14)( +11)

REGION  05  STATE  36  OHIO                           REP ORG  014  LAB  427008

                         ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     31                     -19   +18
   PARS     (  12)                  ( -16)(  +2)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   21


REGION  04  STATE  44  TENNESSEE                     REP ORG  006  LAB  417001

                       ----------------PROBABILITY LIMITS-----------------

  POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW     UP    LOW     UP    LOW     UP    LOW     UP

I11101 HIV      37                     -4     +7
   PARS      (  48)                (  -4)(  +8)


REGION  05  STATE  14  ILLINOIS                      REP ORG  001  LAB  328001

                       ----------------PROBABILITY LIMITS-----------------

  POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW     UP    LOW     UP    LOW     UP    LOW     UP

I11101 HIV      36                     -7    +12
   PARS      (  89)                (  -5)( +10)

  POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW     UP    LOW     UP    LOW     UP    LOW     UP

C42101 CO        6      -18    +11     -8     +5     +0     +4
   PARS      (   4)  ( -11)(  +1)  (  -8)(  +1)  (  -3)(  +2)

I11101 HIV      37                     -4     +7
   PARS      (  17)                ( -10)(  +8)


REGION  05  STATE  36  OHIO                          REP ORG  016  LAB  427012

                       ----------------PROBABILITY LIMITS-----------------

  POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW     UP    LOW     UP    LOW     UP    LOW     UP

C42101 CO        3                     -1     -1
   PARS      (   6)  (  -5)(  +4)  (  -3)(  +5)  (  -4)(  +3)

I11101 HIV      36                     -2     +4
   PARS      (  18)                (  -7)( +10)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

        COMPARISON REPORT OF SLAMS ACCURACY AUDITS & PARS
DATE 11/17/86            DATA SELECTED FOR YEAR 1985          PAGE NO.   32


REGION  05  STATE  14  ILLINOIS                 REP ORG  002  LAB  428001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW     UP    LOW     UP    LOW     UP    LOW     UP

I12128 LEAD     6       -2    +11     -7    +20
   PARS     (  12)  (  -3)(  +4)  (  -3)(  +4)

I42602 NO2      5                     +2     +2      -5     +6
   PARS     (  23)  (  -6)(  +6)  (  -2)(  +4)  (  -2)(  +5)


REGION  05  STATE  14  ILLINOIS                 REP ORG  003  LAB  428001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW     UP    LOW     UP    LOW     UP    LOW     UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW     UP    LOW     UP    LOW     UP    LOW     UP

C42101 CO       3       +2     +2     +1     +1
   PARS     (  10)  ( -11)( +21)  (  -6)(  +9)  (  -4)(  +5)

I11101 HIV     48                     -7     +8
   PARS     (  84)                (  -6)(  +6)

I12128 LEAD    12       -6    +15    -10    +15
   PARS     (  24)  (  -7)(  +8)  (  -2)(  +6)


REGION  06  STATE  04  ARKANSAS                 REP ORG  001  LAB  332001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW     UP    LOW     UP    LOW     UP    LOW     UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   33


REGION  05  STATE  15  INDIANA                        REP ORG  001  LAB  329001

                           ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6      -12    -3      +0     +7      +3    +11
   PARS     (  14)  ( -21)(  +4)  (  -7)( +11)  (  -5)( +12)

I11101 HIV     33                     -5     +8
   PARS     (  28)                (  -6)(  +4)

I12128 LEAD    12      -11   +15     -15     +7
   PARS     (  28)  ( -12)(  +5)  ( -13)(  +6)


REGION  05  STATE  15  INDIANA                        REP ORG  002  LAB  429002

                           ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     32                    -10    +15
   PARS     ( 116)                (  -6)(  +6)


REGION  06  STATE  19  LOUISIANA                      REP ORG  001  LAB  334001

                           ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     34                    -16    +18
   PARS     (  28)                (  -7)(  +9)
```

(continued)

TABLE F-1 (Continued)

```
   ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

               COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
   DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   34


   REGION  05  STATE  15  INDIANA                   REP ORG  003  LAB  429007

                         ----------------PROBABILITY LIMITS-----------------

    POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                         LOW    UP     LOW    UP     LOW    UP     LOW    UP

   I11101 HIV     31                    -4     +5
      PARS     (  28)                (  -5)(  +4)


   REGION  05  STATE  15  INDIANA                   REP ORG  005  LAB  429005

                         ----------------PROBABILITY LIMITS-----------------

    POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                         LOW    UP     LOW    UP     LOW    UP     LOW    UP

   I11101 HIV     37                    -4     +6
      PARS     (  36)                (  -3)(  +3)

                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       9     -18   +14     -16    +8     -16   +10
   PARS     (  12)  (  -7)( +11)  (  -6)(  +7)  (  -7)(  +7)

I11101 HIV     30                   -14   +20
   PARS     ( 155)                (  -7)(  +7)

I12128 LEAD    12      -1    +7      -8    +7
   PARS     (  20)  (  -8)(  +6)  (  -5)(  +7)


REGION  06  STATE  32  NEW MEXICO                   REP ORG  002  LAB  330001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985         PAGE NO.   35


REGION  05  STATE  15  INDIANA                  REP ORG  008  LAB  429004

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       9     -6    -2      -5    +3      -4    +5
   PARS     (  11)  ( -7)(  +6)   ( -5)(  +5)  (  -6)(  +6)

I11101 HIV     32                   -5    +6
   PARS     (  19)                ( -3)(  +6)


REGION  05  STATE  15  INDIANA                  REP ORG  009  LAB  429008

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  06  STATE  37  OKLAHOMA                 REP ORG  102  LAB  431001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     38                   -6    +9
   PARS     (  21)                ( -5)(  +6)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                  COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   36


REGION  05  STATE  15  INDIANA                        REP ORG  010  LAB  429001

                             ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  05  STATE  15  INDIANA                        REP ORG  100  LAB  329002

                             ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


 POL.CD.     AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  06  STATE  45  TEXAS                          REP ORG  001  LAB  333001

                             ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     36                        -6    +8
   PARS      ( 460)                 (   -8)(  +7)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   37


REGION  05  STATE  23  MICHIGAN                     REP ORG  001  LAB  326001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO       9      -9     +4      -2     +2      +0     +1
   PARS     (   8)  ( -11)( +10)  ( -11)(  +7)  ( -12)(  +7)

I11101 HIV     34                     -4     +4
   PARS     (  59)                ( -5)(  +5)

I12128 LEAD    12     -17     -4     -24     -4
   PARS     (  26)  ( -11)(  +5)  (  -8)(  +3)


REGION  05  STATE  23  MICHIGAN                     REP ORG  002  LAB  426001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

I11101 HIV     36                     -4     +6
   PARS     ( 131)                (  -9)(  +5)


REGION  06  STATE  45  TEXAS                        REP ORG  003  LAB  433001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

I11101 HIV     43                     -6     +9
   PARS     (  86)                (  -6)( +10)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                 COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.   38


REGION  05  STATE  24  MINNESOTA                    REP ORG  001  LAB  324001
                           ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO        9       -20    +16      +1     +3      +1     +2
   PARS      (  16)  ( -15)( +13)  (  -4)(  +7)  (  -5)(  +4)

I11101 HIV      38                       -7     +8
   PARS      (  65)                (  -4)(  +5)

I12128 LEAD     12        -3    +15      +1     +4
   PARS      (  11)  (  -8)( +12)  (  -4)(  +6)


REGION  05  STATE  36  OHIO                         REP ORG  001  LAB  327001
                           ----------------PROBABILITY LIMITS----------------

                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

                ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  06  STATE  45  TEXAS                        REP ORG  005  LAB  433005
                           ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                         LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV      37                       -5     +9
   PARS      (  45)                (  -6)(  +8)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   39


REGION  05  STATE  36  OHIO                         REP ORG  002  LAB  327003

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW     UP     LOW     UP     LOW     UP     LOW     UP

I11101 HIV      36                      -7     +9
   PARS      (   6)                 ( -13)( +10)


REGION  05  STATE  36  OHIO                         REP ORG  003  LAB  327005

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW     UP     LOW     UP     LOW     UP     LOW     UP

I11101 HIV      32                      -4     +5
   PARS      (  19)                 ( -14)(  +6)
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42101 CO        5      -4     +4      -2     -2      -5     -1
   PARS      (   8)  ( -11)( +10)  (  -6)(  +4)  (  -4)(  +3)

I11101 HIV      33                     -3     +3
   PARS      (  68)                (  -8)(  +9)

I12128 LEAD     12      -5    +21     -37    +32
   PARS      (  18)  ( -12)( +11)  (  -6)(  +3)


REGION  06  STATE  45  TEXAS                        REP ORG  007  LAB  433010

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW     UP     LOW     UP     LOW     UP     LOW     UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   40


REGION  05  STATE  36  OHIO                          REP ORG  004  LAB  327007

                   -----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     29                   -4    +6
   PARS     (  21)               ( -10)(  +7)


REGION  05  STATE  36  OHIO                          REP ORG  005  LAB  327006

                   -----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     34                   -5    +5
  PARS      (  10)               ( -10)( +12)
                      LOW    UP     LOW    UP

 I11101 HIV     36                   -17   +20
    PARS     (  16)               (  -4)(  +5)


 REGION  07  STATE  16  IOWA                          REP ORG  002

                    -----------------PROBABILITY LIMITS---------

  POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVE
                      LOW    UP     LOW    UP     LOW    UP     LOW

 I11101 HIV     33                    -8   +19
    PARS     (  22)               (  -8)(  +1)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   55


REGION  07  STATE  16  IOWA                         REP ORG  003  LAB  336001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       3       -10   -10      -3    -3      -2    -2
   PARS      (   3)  ( -22)(  +3)  (  -8)(  -1)  (  -3)(  +1)

I11101 HIV     31                      -3    +2
   PARS      (  51)                (  -9)( +17)

I12128 LEAD    12       -13   +11     -15   +12
   PARS      (  12)  (  -5)(  +1)  (  -6)(  +2)


REGION  07  STATE  17  KANSAS                       REP ORG  001  LAB  337001

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       3       -33   -33     -21   -21     -15   -15
   PARS      (   5)  ( -20)( +34)  (  -7)( +11)  (  -7)(  +9)

I11101 HIV     35                     -15   +21
   PARS      (  22)                ( -20)( +20)

I12128 LEAD    12        -3    +8      -8    +4
   PARS      (  24)  ( -13)( +11)  ( -11)(  -2)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985          PAGE NO.   56


REGION  07  STATE  26  MISSOURI                    REP ORG  001  LAB  338001

                           ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       6        +2    +3       +2    +2       -4    +8
   PARS      (   6)  (   -6)( +16)  (   -9)( +15)  ( -17)( +18)

I11101 HIV     34                      -12   +21
   PARS      (  19)                 ( -19)( +23)

I12128 LEAD    12       -13    +6       -9    -1
   PARS      (  12)  ( -11)(   +1)  (   -9)(  -3)


REGION  07  STATE  26  MISSOURI                    REP ORG  002  LAB  438004

                           ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     31                       -4    +2
   PARS      (  11)                 ( -12)( +10)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   57


REGION  07  STATE  26  MISSOURI                  REP ORG  003  LAB  438003
                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  07  STATE  26  MISSOURI                  REP ORG  004  LAB  438006
                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       9     -10   +10      -5    +4      -3    +3
   PARS     (   6)  ( -10)(  +8)  ( -10)(  +6)  ( -11)(  +2)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86             DATA SELECTED FOR YEAR 1985          PAGE NO.   58


REGION  07  STATE  26  MISSOURI                  REP ORG  005  LAB  438005

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW     UP    LOW     UP    LOW     UP    LOW     UP

I11101 HIV    38                      -4     +3
   PARS     (  13)                 (  -4)(  +3)


REGION  07  STATE  28  NEBRASKA                  REP ORG  001  LAB  335001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW     UP    LOW     UP    LOW     UP    LOW     UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                 COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                      DATA SELECTED FOR YEAR 1985          PAGE NO.   59

REGION  07  STATE  28  NEBRASKA                           REP ORG  002  LAB  335001
                                  ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP
I11101 HIV     39                      -8    +11
   PARS      (    6)                (  -5)(  +5)

REGION  07  STATE  28  NEBRASKA                           REP ORG  003  LAB  435002
                                  ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP
                ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF 2ADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985           PAGE NO.   60


REGION  08  STATE  06  COLORADO                     REP ORG  001  LAB  344001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO      18     -24    +4     -8    +1     -7    +5
   PARS     (  29)  ( -12)( +20)  (  -7)( +12)  (  -6)( +10)  ( -25)( +15)


REGION  08  STATE  27  MONTANA                      REP ORG  001  LAB  339001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

          ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985         PAGE NO.   61


REGION  08  STATE  27  MONTANA                      REP ORG  002  LAB  439001
                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     27                       -5    +7
   PARS      (   9)                  ( -10)(  +9)


REGION  08  STATE  27  MONTANA                      REP ORG  003  LAB  439002
                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       3        +1    +1
   PARS      (   7)   ( -15)( +19)  (  -9)( +12)  (  -5)(  +8)

I11101 HIV     28                       -2    +1
   PARS      (  12)                  (  -4)(  +5)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   62


REGION  08  STATE  27  MONTANA                      REP ORG  004  LAB  439003

                   ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     27                      -20   +17
   PARS      (  26)                  (  -8)(  +5)


REGION  08  STATE  35  NORTH DAKOTA                 REP ORG  001  LAB  341001

                   ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     30                       -7    +5
   PARS      (  20)                  (  -4)(  +5)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985          PAGE NO.   63


REGION  08  STATE  43  SOUTH DAKOTA              REP ORG  001  LAB  342001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

I11101 HIV     30                       -7    +5
   PARS      ( 113)                 (  -3)(  +3)


REGION  08  STATE  46  UTAH                      REP ORG  001  LAB  340001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      15        -8   +13      -12   +23       -9   +20
   PARS      (  24)  (  -9)( +12)  (  -4)(  +5)  (  -4)(  +5)

I11101 HIV     39                       -3    +4
   PARS      (  66)                 (  -8)(  +6)

I12128 LEAD    12       -23   +15      -38   +17
   PARS      (  10)  (  -7)( +14)  ( -16)( +10)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985           PAGE NO.   64


REGION  08  STATE  52  WYOMING                    REP ORG  001  LAB  343001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV     34                    -10   +13
   PARS     (  20)                 (  -7)(  +4)


REGION  09  STATE  03  ARIZONA                    REP ORG  100  LAB  347001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       6       -6    -4      -3    +0      -1    -1
   PARS     (   8)   (  -3)(  +6)  (  -9)( +11)  (  -6)(  +8)  (  -9)( +11)

I11101 HIV     33                    -16   +25
   PARS     (  18)                 ( -17)( +13)

I12128 LEAD    12       -7    +8      -7    +2
   PARS     (  28)   (  -7)(  +1)  (  -5)(  +3)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.   65


REGION  09  STATE  03  ARIZONA                         REP ORG  200  LAB  447001

                       ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

I11101 HIV     38                       -7   +13
   PARS      (  55)                  ( -10)( +13)


REGION  09  STATE  03  ARIZONA                         REP ORG  300  LAB  447002

                       ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

I11101 HIV     31                      -18   +26
   PARS      (  12)                  ( -14)( +13)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                     COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   66


REGION  09  STATE  05  CALIFORNIA                 REP ORG  001  LAB  345001

                              ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42101 CO       3      -18    -18       -4     -4       +1     +1
   PARS      (  33)  (  -9)( +14)  (  -8)(  +9)  (  -8)(  +7)

I12128 LEAD    12      -32    +25       -8    +11
   PARS      (  32)                ( -14)(  +9)


REGION  09  STATE  05  CALIFORNIA                 REP ORG  004  LAB  445001

                              ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                       LOW    UP       LOW    UP       LOW    UP       LOW    UP

I11101 HIV     30                       -3     +4
   PARS      (  40)                (  -7)(  +6)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   67


REGION  09  STATE  05  CALIFORNIA                 REP ORG  036  LAB  445003

                    -----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42101 CO       11       +4    +9      +2    +7      +1    +5
  PARS       (   8)  (  -5)(  +8)  (  -2)(  +7)  (  -3)(  +5)

I11101 HIV      35                    -22   +21
  PARS       (  10)                (  -3)(  +9)


REGION  09  STATE  05  CALIFORNIA                 REP ORG  061  LAB  445002

                    -----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV      29                    -22   +31
  PARS       (  37)                ( -11)(  +6)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   68


REGION  09  STATE  12  HAWAII                    REP ORG  120  LAB  348001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  09  STATE  29  NEVADA                    REP ORG  100  LAB  346001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                     DATA SELECTED FOR YEAR 1985           PAGE NO.   69


REGION  09  STATE  29  NEVADA                          REP ORG  300  LAB  446002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

                ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  10  STATE  02  ALASKA                          REP ORG  020  LAB  351001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

I11101 HIV     32                     -7     +7
   PARS      (   8)               (   -5)(   +4)

I12128 LEAD    12     -19    +12     -10    +11
   PARS      (   9) (   -2)( +10) ( -11)( +15)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985           PAGE NO.   70

REGION  10  STATE  13  IDAHO                             REP ORG  001  LAB  354001

                         ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO       3        -4    -4       -3    -3       -4    -4
   PARS     (   8)  (  -8)(  +1)  (  -8)(  +1)  (  -7)(  +3)

I11101 HIV     30                       -2    +2
   PARS     (  74)                (  -6)( +10)

I12128 LEAD    12        -7    +4       -9    +1
   PARS     (  12)  ( -13)( +14)  ( -14)(  +9)

REGION  10  STATE  38  OREGON                            REP ORG  001  LAB  353001

                         ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42101 CO      21        -7    +4       -2    +1       -1    +0
   PARS     (  49)  ( -16)( +15)  (  -9)(  +7)  (  -8)(  +5)

I11101 HIV     37                       -6    +7
   PARS     ( 318)                (  -4)(  +5)

I12128 LEAD    12        -7    +9       +1   +10
   PARS     (  12)  (  -1)(  +8)  (  -1)(  +8)
```

(continued)

TABLE F-1 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                 COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                     DATA SELECTED FOR YEAR 1985        PAGE NO.   71

REGION  10  STATE  49  WASHINGTON                     REP ORG  001  LAB  352001
                       ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

I11101 HIV    57                    -15    +9
   PARS     (  49)               ( -11)( +12)
```

(continued)

TABLE F-1 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1985

REGIONAL SUMMARY

REGION		AUDITS	PROBABILITY LIMITS					
			LEVEL 1		LEVEL 2		LEVEL 3	
			LOW	UP	LOW	UP	LOW	UP
POL. CD. I42401 SO_2								
03	PA	5	-31	4	3	7	3	3
	PARS	24	-12	8	-7	8	-8	7
04	PA	10	-2	18	-12	28	-2	11
POL. CD. I42602 NO_2								
04	PA	10	0	3	0	8	-2	4
	PARS	17	-30	30	-14	23	-21	29
05	PA	5	2	2	1	5	-2	6
	PARS	23	-6	6	-2	4	-2	5
POL. CD. C42101 CO								
01	PA	15	-3	9	-1	6	-3	6
	PARS	25	-5	10	-5	5	-5	6
02	PA	36	-2	2	-1	5	0	7
	PARS	104	-10	11	-6	8	-5	6
03	PA	78	-15	8	-14	7	-13	8
	PARS	80	-10	9	-9	5	-9	7
04	PA	87	-8	6	-6	5	-5	5
	PARS	161	-17	12	-10	8	-9	7
05	PA	56	-14	8	-5	6	-3	7
	PARS	91	-15	13	-7	8	-7	8
06	PA	15	-14	11	-12	6	-13	7
	PARS	20	-9	11	-6	6	-6	6

(continued)

TABLE F-1 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1983

REGIONAL SUMMARY

REGION		AUDITS	PROBABILITY LIMITS					
			LEVEL 1		LEVEL 2		LEVEL 3	
			LOW	UP	LOW	UP	LOW	UP
POL. CD. C42101 CO								
07	PA	21	-30	19	-18	12	-13	10
	PARS	20	-17	20	-10	10	-12	10
08	PA	36	-21	13	-14	15	-10	14
	PARS	60	-11	17	-6	10	-5	8
09	PA	20	-19	17	-6	9	-2	5
	PARS	49	-8	12	-7	9	-7	7
10	PA	24	-7	4	-3	1	-3	1
	PARS	57	-16	14	-9	6	-8	5
POL. CD. I11101 HIV								
01	PA	166			-7	6		
	PARS	355			-9	7		
02	PA	102			-11	18		
	PARS	203			-4	7		
03	PA	458			-7	8		
	PARS	427			-9	9		
04	PA	1056			-9	13		
	PARS	2105			-7	8		
05	PA	827			-7	9		
	PARS	681			-8	8		
06	PA	319			-9	12		
	PARS	1110			-8	7		

(continued)

TABLE F-1 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1985

REGIONAL SUMMARY

REGION		AUDITS	LEVEL 1 LOW	LEVEL 1 UP	LEVEL 2 LOW	LEVEL 2 UP	LEVEL 3 LOW	LEVEL 3 UP
POL. CD. I11101 HIV								
07	PA	277			-11	14		
	PARS	160			-13	15		
08	PA	215			-9	9		
	PARS	266			-6	5		
09	PA	196			-16	22		
	PARS	172			-11	10		
10	PA	156			-10	8		
	PARS	449			-6	7		
POL. CD. I12128 LEAD								
01	PA	48	-12	17	-12	5		
	PARS	95	-14	12	-9	8		
02	PA	36	-14	17	-10	11		
	PARS	61	-9	12	-6	9		
03	PA	72	-20	17	-10	5		
	PARS	191	-11	8	-9	4		
04	PA	78	-9	10	-10	7		
	PARS	125	-14	10	-6	6		
05	PA	66	-24	21	-18	13		
	PARS	116	-10	7	-9	6		
06	PA	24	-5	16	-26	23		
	PARS	38	-10	9	-6	6		

(continued)

TABLE F-1 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1985

REGIONAL SUMMARY

			PROBABILITY LIMITS					
REGION		AUDITS	LEVEL 1		LEVEL 2		LEVEL 3	
			LOW	UP	LOW	UP	LOW	UP
POL. CD. I12128 LEAD								
07	PA	36	-11	10	-12	6		
	PARS	48	-12	7	-11	0		
08	PA	12	-23	15	-38	17		
	PARS	10	-7	14	-16	10		
09	PA	24	-7	8	-9	8		
	PARS	60	-7	1	-11	7		
10	PA	36	-12	11	-11	8		
	PARS	33	-7	12	-10	12		

(continued)

TABLE F-1 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1985

NATIONAL AVERAGES

		PROBABILITY LIMITS					
		LEVEL 1		LEVEL 2		LEVEL 3	
POL. CD.	AUDITS	LOW	UP	LOW	UP	LOW	UP
C42101 CO							
PA	388	-14	10	-10	9	-8	9
PARS	667	-13	13	-8	8	-8	7
I11101 HIV							
PA	3772			-10	12		
PARS	5928			-8	8		
I12128 LEAD							
PA	432	-16	16	-15	10		
PARS	777	-12	9	9	7		
I42401 SO_2							
PA	15	-24	25	-9	22	-1	9
PARS	55	-21	20	-10	12	-10	11
I42602 NO_2							
PA	15	0	3	0	7	-2	4
PARS	40	-20	20	-10	15	-14	19

TABLE F-2. PARS AND PA DATA FOR SO_2 CONTINUOUS MONITORS

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86             DATA SELECTED FOR YEAR 1985         PAGE NO.     1


REGION  01  STATE  07  CONNECTICUT                REP ORG  001  LAB  306001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2       4      -7    -7      -3    -1
   PARS      (  19)  (  -7)(  +4)  (  -5)(  +4)  (  -6)(  +2)


REGION  01  STATE  20  MAINE                      REP ORG  001  LAB  301001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2       8      +1    +2      -6    +1      -6    +0
   PARS      (   9)  (  -4)(  +7)  (  -6)(  +5)  (  -5)(  +3)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.     2


REGION  01  STATE  22  MASSACHUSETTS             REP ORG  001  LAB  304001
                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  01  STATE  30  NEW HAMPSHIRE             REP ORG  001  LAB  302001
                     ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12       -6    +14     -2    +4     +0    +4
   PARS      (  27)  ( -11)(  +7)  ( -10)(  +8)  (  -9)( +10)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.    3


REGION  01  STATE  41  RHODE ISLAND            REP ORG  001  LAB  305001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW     UP    LOW     UP    LOW     UP    LOW     UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  01  STATE  47  VERMONT                 REP ORG  001  LAB  303001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW     UP    LOW     UP    LOW     UP    LOW     UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86             DATA SELECTED FOR YEAR 1985          PAGE NO.    4


REGION  02  STATE  31  NEW JERSEY              REP ORG  001  LAB  308001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     8       -1    +3       +0    +2       +0    +2
   PARS     (  47)  ( -13)( +12)  ( -10)( +10)


REGION  02  STATE  33  NEW YORK                REP ORG  001  LAB  307001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     4       +4    +4       +4    +5       +4    +4
   PARS     ( 173)  ( -11)( +14)  ( -10)( +12)  ( -10)( +12)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.    5


REGION  02  STATE  40  PUERTO RICO              REP ORG  001  LAB  309001

                   ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8       -7   +43       +2   +20       +1   +13
   PARS      (  15)  ( -14)(  +5)  (  -9)(  +4)  (  -9)(  +3)


REGION  03  STATE  08  DELAWARE                 REP ORG  001  LAB  313002

                   ----------------PROBABILITY LIMITS----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

          ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.    6


REGION  03  STATE  09  DISTRICT OF COLUMBIA      REP ORG  001  LAB  312100

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  03  STATE  21  MARYLAND                  REP ORG  001  LAB  312001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS    LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2    14       -4    +22     -3    +13     -6    +13     -9    +17
   PARS     (  22)  ( -14)(  +6)  ( -12)(  +7)  ( -12)(  +7)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.     7


REGION  03  STATE  21  MARYLAND                  REP ORG  003  LAB  412004

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  03  STATE  21  MARYLAND                  REP ORG  005  LAB  412002

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4       +3     +9      +1     +5     +5     +5
   PARS     (    7)  (  -7)(  +1)  (  -4)(  +2)  (  -4)(  +2)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985           PAGE NO.    8


REGION  03  STATE  39  PENNSYLVANIA              REP ORG  001  LAB  311002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     16      -5   +17      +3   +10      +0   +14
   PARS     (  31)  ( -11)( +13)  ( -11)( +13)  ( -11)( +12)


REGION  03  STATE  39  PENNSYLVANIA              REP ORG  002  LAB  411002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     27      +0   +10      +0    +7      +0    +7      -1    +7
   PARS     (  34)  ( -12)(  +6)  ( -10)(  +6)  ( -10)(  +7)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.    9


REGION  03  STATE  39  PENNSYLVANIA              REP ORG  003  LAB  411001

                        ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8        +2     +7      +0     +8      +0     +8
   PARS     (   8)  ( -18)(  +3)  (  -9)(  +1)  (  -5)(  +3)


REGION  03  STATE  48  VIRGINIA                  REP ORG  001  LAB  315001

                        ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS       LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8        -2     +4      -2     +3      -2     +4
   PARS     (  10)  ( -11)(  +7)  (  -8)(  +5)  ( -10)(  +3)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   10


REGION  03  STATE  48  VIRGINIA                  REP ORG  003  LAB  415004

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12       +0   +19      +5   +11      +2   +13
   PARS     (   14)  ( -11)( +10)  ( -11)( +12)  (   -9)( +13)


REGION  03  STATE  50  WEST VIRGINIA             REP ORG  001  LAB  314001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   11


REGION  03   STATE  50  WEST VIRGINIA              REP ORG  002  LAB  314002

                      -----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2      8       -7     +0      -5     +2      -3     +1
   PARS      (  22)  ( -12)( +11)  (  -5)(  +7)  (  -6)(  +6)


REGION  04   STATE  01  ALABAMA                    REP ORG  012  LAB  419001

                      -----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985           PAGE NO.   12


REGION  04  STATE  01  ALABAMA                       REP ORG  013  LAB  319001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

                ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  01  ALABAMA                       REP ORG  015  LAB  419005

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4       +44   +44      +2     +3      -2     -2
   PARS      (  5)   ( -13)( +14)   ( -14)( +18)   (  -9)(  -2)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985         PAGE NO.   13


REGION  04  STATE  10  FLORIDA                    REP ORG  001  LAB  323005

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  10  FLORIDA                    REP ORG  002  LAB  323003

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2      9       -3    +34      +2    +19
   PARS     (   6)  ( -27)( +17)  (  -8)( +11)  (  +0)(  +5)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   14


REGION  04   STATE  10  FLORIDA                      REP ORG  003  LAB  323004

                          ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2         LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4        +2     +2      -1     +4      -1     -1
   PARS     (    6)  ( -23)(  +5)  ( -17)( +11)  ( -16)( +11)


REGION  04   STATE  10  FLORIDA                      REP ORG  004  LAB  323008

                          ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2         LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985         PAGE NO.   15


REGION  04  STATE  10  FLORIDA                     REP ORG  005  LAB  323002

                           ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  10  FLORIDA                     REP ORG  007  LAB  323010

                           ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   16


REGION  04  STATE  10  FLORIDA                     REP ORG  011  LAB  423003

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12      -74   +12     -66    +7     -72   +12
   PARS      (  20)  ( -21)( +15)  ( -12)( +10)  ( -11)( +12)


REGION  04  STATE  10  FLORIDA                     REP ORG  012  LAB  423004

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     22       -4   +12      -5    +8      -6    +8      -4    +1
   PARS      (  10)  (  -9)(  +7)  (  -6)(  +7)  (  -7)( +10)  (  -2)(  +4)

C42401 SO2     22       -4   +12      -5    +8      -6    +8      -4    +1
   PARS      (  31)  ( -13)( +10)  ( -10)(  +7)  (  -7)(  +6)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   17


REGION  04  STATE  10  FLORIDA                      REP ORG  013  LAB  423016

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      15      -12    +8      -8    +4      -6    +1
   PARS      (   18)  ( -16)(  +5)  ( -15)(  +8)  ( -15)(  +9)


REGION  04  STATE  10  FLORIDA                      REP ORG  014  LAB  423005

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

          ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   18


REGION  04  STATE  10  FLORIDA                     REP ORG  015  LAB  423015
                            ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

                    ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  10  FLORIDA                     REP ORG  016  LAB  423008
                            ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4      +2     +2      +7     +9      +8     +8
   PARS     (   6)  ( -10)( +10)  (  -9)( +15)  (  -5)( +11)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   19


REGION  04  STATE  10  FLORIDA                    REP ORG  017  LAB  423001
                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  10  FLORIDA                    REP ORG  018  LAB  423002
                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985         PAGE NO.   20


REGION  04  STATE  11  GEORGIA                       REP ORG  010  LAB  321001
                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2       8       +7    +26      +8    +28      -2    +32
   PARS      (  10)  ( -16)( +15)  ( -15)(  +8)  (   -9)( +10)


REGION  04  STATE  18  KENTUCKY                      REP ORG  001  LAB  316001
                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2       3       +3     +3      +3     +4
   PARS      (  30)  ( -11)( +12)  ( -12)(  +7)  ( -14)(  +7)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   21


REGION  04  STATE  18  KENTUCKY                  REP ORG  002  LAB  416001

                      ----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12     +2    +17      +6   +10      +5    +8
   PARS     (  32)  ( -20)( +14)  (  -9)(  +6)  ( -13)(  +6)


REGION  04  STATE  25  MISSISSIPPI               REP ORG  100  LAB  322001

                      ----------------PROBABILITY LIMITS------------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      8      -6    +8                    +0    +1
   PARS     (  11)  ( -29)(  +7)  ( -19)(  +0)  ( -15)(  -2)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   22


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  001  LAB  318001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     17      -10    +2     -5    +6     -8    +9     -1    -1
   PARS     (  17)  ( -14)(  +9)  ( -16)( +10)  ( -16)( +12)  ( -11)( +14)


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  002  LAB  418003

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      8       -9   +13    -10    -1    -11    -4
   PARS     (   8)  ( -21)(  +5)  ( -15)(  +6)  ( -14)(  +5)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   23


REGION  04  STATE  34  NORTH CAROLINA            REP ORG  003  LAB  418006

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  04  STATE  42  SOUTH CAROLINA            REP ORG  001  LAB  320001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2    16      -26    +18     -3    +6      -4    +7
   PARS     (  83)  ( -20)( +11)  ( -11)( +10)  ( -11)( +10)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF SLAMS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985          PAGE NO.   24


REGION  04  STATE  44  TENNESSEE                   REP ORG  001  LAB  317001

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     13      -16   +25      -9   +23     -16   +28     -16   +28
   PARS     (    9)  ( -11)( +12)  ( -10)( +12)  (  -9)( +10)  ( -14)( +11)


REGION  04  STATE  44  TENNESSEE                   REP ORG  002  LAB  417004

                       ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   25


REGION  04  STATE  44  TENNESSEE                  REP ORG  003  LAB  417003

                 ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4       +4     +4      +9    +10      +7     +7
   PARS     (   8)  (   -8)(   +9)  (   -5)(   +5)  (   -6)( +11)


REGION  04  STATE  44  TENNESSEE                  REP ORG  006  LAB  417001

                 ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

          ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
               COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985          PAGE NO.   25

REGION  05  STATE  14  ILLINOIS                          REP ORG  001  LAB  328001
                        ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42401 SO2     12       -30   +61      -10   +20      -12   +19
   PARS      (  23)   ( -17)( +14)   ( -14)( +12)   ( -13)( +12)   ( -15)( +16)

REGION  05  STATE  14  ILLINOIS                          REP ORG  003  LAB  428001
                        ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP
             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF ΩADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   27


REGION  05  STATE  15  INDIANA                       REP ORG  001  LAB  329001

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     12        -2    +1       -1    +5       +1    +3
   PARS      (  38)  ( -12)( +11)  (  -9)( +10)  (  -7)(  +9)


REGION  05  STATE  15  INDIANA                       REP ORG  002  LAB  429002

                    ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4        +2    +2       -3    +0       -4    -4
   PARS      (   5)  ( -18)(  +5)  ( -13)(  +4)  ( -13)(  +5)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                     DATA SELECTED FOR YEAR 1985          PAGE NO.   28


REGION  05  STATE  15  INDIANA                          REP ORG  005  LAB  429005
                           ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP
                ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  05  STATE  15  INDIANA                          REP ORG  008  LAB  429004
                           ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP
C42401 SO2       8       +0     +5      +2     +4      -2     +5
   PARS     (    8)  (  -6)( +11)  (  -5)( +11)  (  -3)(  +8)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   29


REGION  05  STATE  15  INDIANA                          REP ORG  010  LAB  429001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  05  STATE  15  INDIANA                          REP ORG  100  LAB  329002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

           ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                 COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                     DATA SELECTED FOR YEAR 1985          PAGE NO.   30


REGION  05  STATE  23  MICHIGAN                           REP ORG  001  LAB  326001

                            ----------------PROBABILITY LIMITS-----------------

 POL.CD.      AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                          LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      4         +7     +7       +6    +12       +11   +11
   PARS      (   12)   ( -20)(  +9)   ( -17)(  +9)   ( -18)( +10)


REGION  05  STATE  23  MICHIGAN                           REP ORG  002  LAB  426001

                            ----------------PROBABILITY LIMITS-----------------

 POL.CD.      AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                          LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2      8         -47    +44      -6     +7       -5     +7
   PARS      (    8)   (   -8)( +12)   (   -8)( +10)   (   -7)(  +9)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985           PAGE NO.   31


REGION  05   STATE  24  MINNESOTA                  REP ORG  001  LAB  324001

                        ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     17        -2   +13       -2    +9       -2   +10       +4    +4
   PARS     (  24)  (  -7)( +10)  (  -6)(  +9)  (  -7)(  +8)  (  +2)(  +4)


REGION  05   STATE  36  OHIO                       REP ORG  001  LAB  327001

                        ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8                      -22    +9      -24   +11      -29   -27
   PARS     (   5)  ( -28)( +28)  ( -26)( +25)  ( -31)( +30)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   32


REGION  05  STATE  36  OHIO                           REP ORG  002  LAB  327003

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

042401 SO2      8       -16    +8     -11    -1     -10    +1
   PARS     (   8)  ( -23)(  +9)  ( -27)( +14)  ( -34)( +18)


REGION  05  STATE  36  OHIO                           REP ORG  003  LAB  327005

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985           PAGE NO.   33


REGION  05  STATE  36  OHIO                          REP ORG  004  LAB  327007

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2       8     -16    +28     -11    +24     -13    +25
   PARS      (    4)  ( -23)( +43)  ( -30)( +45)  ( -29)( +40)


REGION  05  STATE  36  OHIO                          REP ORG  006  LAB  427001

                    ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2      12      -6    +16      -5     +6      -8     +6
   PARS      (    4)  ( -19)( +11)  ( -10)( +16)  (  -9)( +17)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                   DATA SELECTED FOR YEAR 1985          PAGE NO.   34


REGION  05  STATE  36  OHIO                          REP ORG  007  LAB  427002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2      8       -8     +6      -6     +3      -5     +1
   PARS     (    5)  ( -24)( +13)  ( -13)( +10)  ( -12)(  +7)


REGION  05  STATE  36  OHIO                          REP ORG  008  LAB  427003

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2     12       +4     +9      +2     +8      +2     +8
   PARS     (    7)  ( -10)( +27)  (  -6)( +15)  ( -11)( +14)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

               COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.   35


REGION  05  STATE  36  OHIO                          REP ORG  009  LAB  427004

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2       8      -8    +18      +0     +6      +0     +6
   PARS      (    8)  ( -24)( +20)  ( -13)( +16)  ( -16)( +20)


REGION  05  STATE  36  OHIO                          REP ORG  010  LAB  427005

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2  .    8     -11    +13      -7     +6     -13    +10
   PARS      (    4)  (  -8)(  +4)  ( -12)(  +7)  ( -13)(  +8)
```

(continued)

TABLE F-2 (Contimued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF SADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985           PAGE NO.   36


REGION  05   STATE  36  OHIO                         REP ORG  012  LAB  427007

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8      -13   +34      -3   +17      -4   +13
   PARS     (   5)  (  -4)(  +7)  (  -4)( +12)  (  -5)( +15)


REGION  05   STATE  36  OHIO                         REP ORG  013  LAB  427010

                  ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4                     -28   +16
   PARS     (   2)  ( -34)( +42)  ( -43)( +46)  ( -42)( +45)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985           PAGE NO.   37


REGION  05  STATE  36  OHIO                           REP ORG  014  LAB  427008

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      8       -13    +15     +1    +6     +3    +9
   PARS      (   8)  ( -14)( +14)  ( -15)( +17)  ( -14)( +17)


REGION  05  STATE  36  OHIO                           REP ORG  015  LAB  427009

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                        LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
                    COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                     DATA SELECTED FOR YEAR 1985              PAGE NO.   38

REGION  05  STATE  36  OHIO                             REP ORG  016  LAB  427012
                        ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                        LOW    UP        LOW    UP        LOW    UP        LOW    UP
C42401 SO2       8       -2    +3        -6    -1        -10    +1
   PARS     (    5)  ( -42)( +58)    ( -47)( +80)    ( -43)( +77)

REGION  05  STATE  51  WISCONSIN                        REP ORG  001  LAB  325001
                        ----------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS      LEVEL 1          LEVEL 2          LEVEL 3          LEVEL 4
                        LOW    UP        LOW    UP        LOW    UP        LOW    UP
C42401 SO2      14      -11    +5        -9    +3        -8    +4        -9    +2
   PARS     (   21)  (  -7)( +11)    (  -3)(  +6)    (  -5)(  +5)    (  -8)(  +2)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   39


REGION  06  STATE  04  ARKANSAS                  REP ORG  001  LAB  332001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8     -3    +2       -5    +2       -3    -2
   PARS     (   8)  ( -50)( +35)  ( -44)( +35)  ( -44)( +37)


REGION  06  STATE  19  LOUISIANA                 REP ORG  001  LAB  334001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                     LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8     -4   +12       -3   +13       -2   +14
   PARS     (  18)  ( -11)( +16)  (  -9)( +13)  (  -8)( +13)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
             COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   40


REGION  06  STATE  32  NEW MEXICO                  REP ORG  001  LAB  330001
                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2    12      -13    +7      -8    +5     -11    +3
   PARS     (  41)  ( -11)( +13)  (  -7)( +10)  (  -8)(  +9)


REGION  06  STATE  32  NEW MEXICO                  REP ORG  002  LAB  330001
                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   41


REGION  06   STATE  37  OKLAHOMA                       REP ORG  101  LAB  331001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      4       +36    +36      +0    +23      +6     +6
   PARS      (   6)  ( -17)(   +9)  ( -19)( +12)  ( -17)( +10)


REGION  06   STATE  37  OKLAHOMA                       REP ORG  102  LAB  431001

                        ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      3       +17    +17     +13    +14
   PARS      (   4)  (  -9)( +17)  (  -8)(  +1)  ( -14)(  +7)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   42

REGION  06  STATE  37  OKLAHOMA                    REP ORG  103  LAB  431002
                    ----------------PROBABILITY LIMITS----------------
 POL.CD.    AUDITS     LEVEL 1      LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP    LOW    UP     LOW    UP     LOW    UP

C42401 SO2      8      -3   +22    +2   +17     +0   +21
   PARS     (   8)  ( -14)(  +6)  (  -7)(  +7)  (  -5)(  +4)

REGION  06  STATE  45  TEXAS                       REP ORG  001  LAB  333001
                    ----------------PROBABILITY LIMITS----------------
 POL.CD.    AUDITS     LEVEL 1      LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP    LOW    UP     LOW    UP     LOW    UP

C42401 SO2     36     -13    +8    -6    +5     -7    +5
   PARS     (  27)  ( -26)( +16)  ( -15)(  +7)  ( -13)(  +8)  ( -19)( +12)
```

(continued)

TABLE F-2 (Continued))

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985           PAGE NO.   43


REGION  06   STATE  45  TEXAS                         REP ORG  002  LAB  433002

                          ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2       4       -2     -2       +2     +3       +2     +2
   PARS     (    4)  ( -15)( +17)  (  -3)(  +8)  (  -3)( +11)


REGION  06   STATE  45  TEXAS                         REP ORG  003  LAB  433001

                          ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1         LEVEL 2         LEVEL 3         LEVEL 4
                        LOW    UP       LOW    UP       LOW    UP       LOW    UP

C42401 SO2       5      +10    +10       +3     +8       +4     +4       +3     +3
   PARS     (    7)  ( -19)(  -5)  ( -12)(  +4)  (  +3)(  +4)  (  +1)(  +4)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   44


REGION  06  STATE  45  TEXAS                      REP ORG  006  LAB  433008

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12      -25   +11    -50  +111      +2   +69
  PARS      (   14)  ( -17)(  -5)  ( -16)(  -5)  ( -14)(  -2)


REGION  07  STATE  16  IOWA                       REP ORG  002  LAB  436002

                      ----------------PROBABILITY LIMITS----------------

 POL.CD.    AUDITS      LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      8       -1   +16    -11   +11     -12    +4
  PARS      (   12)  (  -9)(  +2)  (  -6)(  +5)  (  -7)( +11)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   45


REGION  07  STATE  16  IOWA                          REP ORG  003  LAB  336001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      6       +29   +51      +33   +46      +31   +45
   PARS     (   10)  (   -8)( +10)  (   -7)(   +9)  ( -10)(   +7)


REGION  07  STATE  17  KANSAS                        REP ORG  001  LAB  337001

                   ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                        LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2      8        -9   +15       -7    +0       -6    -5
   PARS     (    5)  ( -26)( +16)  ( -17)( +12)  ( -12)( +11)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

         COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86             DATA SELECTED FOR YEAR 1985          PAGE NO.   46


REGION  07  STATE  26  MISSOURI                    REP ORG  001  LAB  338001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12      -6    +2      -6    +3      -7    +2
   PARS     (    8)  ( -22)( +23)  ( -17)( +14)  ( -22)(  +9)


REGION  07  STATE  26  MISSOURI                    REP ORG  002  LAB  438004

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                     LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2     12      +6   +14      -3   +10      -2    +8
   PARS     (    8)  ( -22)( +14)  ( -11)( +11)  ( -14)( +11)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

           COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   47


REGION  07  STATE  26  MISSOURI                   REP ORG  003  LAB  438003

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2       7      +4    +27     -6    +20     +3    +3
   PARS      (    6)  (  -8)( +23)  (  -4)( +20)  (  -8)(  +9)


REGION  07  STATE  26  MISSOURI                   REP ORG  004  LAB  438006

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM
            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   48


REGION  07  STATE  26  MISSOURI                      REP ORG  005  LAB  438005
                  ------------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      9       -1    +3     +0    +3     -1    +5     +3    +3
   PARS     (   6)  ( -20)( +10)  ( -14)(  +7)  ( -16)(  +3)


REGION  07  STATE  28  NEBRASKA                      REP ORG  003  LAB  435002
                  ------------------PROBABILITY LIMITS-----------------
 POL.CD.     AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                       LOW    UP     LOW    UP     LOW    UP     LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   49


REGION  08  STATE  06  COLORADO                   REP ORG  001  LAB  344001
                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2       8       -3     +7     -7     +2     -8     +3
   PARS      (   7)  ( -30)( +13)  ( -23)( +13)  ( -20)(  +6)


REGION  08  STATE  27  MONTANA                    REP ORG  001  LAB  339001
                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2      20      -43    +35    -26    +17    -24    +13
   PARS      (  24)  ( -32)( +19)  ( -22)( +11)  ( -20)(  +8)  ( -20)(  +6)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

              COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                  DATA SELECTED FOR YEAR 1985           PAGE NO.   50


REGION  08  STATE  35  NORTH DAKOTA                 REP ORG  001  LAB  341001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     12       +1   +15      +2    +8       -2   +11
   PARS     (   6)  (  +2)( +11)  (  -2)( +11)  (  -7)(  +8)


REGION  08  STATE  46  UTAH                         REP ORG  001  LAB  340001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     18       +1    +5      -1    +5       -4    +5
   PARS     (  38)  ( -11)(  +6)  (  -9)(  +7)  (  -9)(  +6)  (  -8)(  +7)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   51


REGION  09  STATE  03  ARIZONA                          REP ORG  100  LAB  347001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

C42401 SO2     20      -16    +18      -9     +9      -5     +8      -8     +9
   PARS     (  18)  ( -21)(   +2)  ( -16)(   +4)  (  -7)(   +3)  (  -9)(   +9)


REGION  09  STATE  03  ARIZONA                          REP ORG  200  LAB  447001

                     ----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS      LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW     UP     LOW     UP     LOW     UP     LOW     UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

          COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86               DATA SELECTED FOR YEAR 1985          PAGE NO.   52


REGION  09  STATE  03  ARIZONA                      REP ORG  300  LAB  447002
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

            ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  09  STATE  05  CALIFORNIA                   REP ORG  001  LAB  345001
                      ----------------PROBABILITY LIMITS-----------------
 POL.CD.    AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                      LOW    UP      LOW    UP      LOW    UP      LOW    UP

C42401 SO2     4       -8     -8      -7     -6      -7     -7
   PARS     (  26)  ( -20)( +15)  ( -15)(  +9)  ( -17)( +10)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

                COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                 DATA SELECTED FOR YEAR 1985          PAGE NO.   53


REGION  09  STATE  05  CALIFORNIA                  REP ORG  004  LAB  445001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP    LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4                   -1    -1
   PARS     (  20)  (  -6)( +14)  (  -5)( +12)  (  -5)( +11)  (  -2)(  +3)


REGION  09  STATE  05  CALIFORNIA                  REP ORG  036  LAB  445003

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP    LOW    UP     LOW    UP     LOW    UP

C42401 SO2     20     -29   +26    -11   +12     -12   +18
   PARS     (   9)  ( -15)( +24)  (  -6)( +17)  (  -4)( +16)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   54


REGION  09  STATE  05  CALIFORNIA                REP ORG  061  LAB  445002

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP    LOW    UP    LOW    UP    LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  09  STATE  12  HAWAII                    REP ORG  120  LAB  348001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP    LOW    UP    LOW    UP    LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86              DATA SELECTED FOR YEAR 1985          PAGE NO.   55


REGION  10  STATE  13  IDAHO                     REP ORG  001  LAB  354001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

             ** DATA FOR COMPARISON WAS UNAVAILABLE **


REGION  10  STATE  38  OREGON                    REP ORG  001  LAB  353001

                      ----------------PROBABILITY LIMITS-----------------

 POL.CD.    AUDITS     LEVEL 1       LEVEL 2       LEVEL 3       LEVEL 4
                      LOW    UP     LOW    UP     LOW    UP     LOW    UP

C42401 SO2      4      +8    +8     -14   -12     -20   -20
   PARS     (   7)  ( -12)(  +5)  ( -10)(  +8)  ( -11)(  +6)
```

(continued)

TABLE F-2 (Continued)

```
ENVIRONMENTAL PROTECTION AGENCY   EMSL PRECISION/ACCURACY REPORTING SYSTEM

            COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATE 11/17/86                DATA SELECTED FOR YEAR 1985          PAGE NO.   56


REGION  10  STATE  49  WASHINGTON                     REP ORG  001  LAB  352001

                      -----------------PROBABILITY LIMITS-----------------

 POL.CD.     AUDITS     LEVEL 1        LEVEL 2        LEVEL 3        LEVEL 4
                       LOW    UP      LOW    UP      LOW    UP      LOW    UP

042401 SO2     4        -4     -4      -5     -3      -3     -3
   PARS     (  23)  ( -10)(  +9)  ( -10)( +10)  ( -11)( +10)  ( -14)( +11)
```

(continued)

TABLE F-2 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1985

REGIONAL SUMMARY

			PROBABILITY LIMITS					
REGION		AUDITS	LEVEL 1		LEVEL 2		LEVEL 3	
			LOW	UP	LOW	UP	LOW	UP
POL. CD. C42401 SO_2								
01	PA	24	-9	12	-5	4	-5	5
	PARS	55	-9	6	-8	6	-8	7
02	PA	20	-14	30	-5	16	0	12
	PARS	235	-12	13	-10	11	-10	12
03	PA	97	-5	16	-2	11	-3	11
	PARS	148	-13	9	-10	9	-10	8
04	PA	160	-28	31	-22	24	-25	24
	PARS	310	-18	12	-12	9	-12	9
05	PA	179	-17	23	-10	12	-10	12
	PARS	208	-17	16	-16	17	-16	17
06	PA	100	-19	22	-28	39	-22	32
	PARS	137	-22	16	-17	13	-15	13
07	PA	62	-15	33	-19	29	-21	27
	PARS	55	-17	15	-12	12	-14	10
08	PA	58	-23	26	-15	14	-15	13
	PARS	75	-22	15	-16	11	-15	8
09	PA	48	-22	20	-10	10	-10	13
	PARS	73	-19	16	-14	12	-12	12
10	PA	8	-11	15	-18	1	-29	6
	PARS	30	-11	8	-10	9	-11	9

(continued)

TABLE F-2 (Continued)

EMSL PRECISION/ACCURACY REPORTING SYSTEM

COMPARISON REPORT OF QADHS ACCURACY AUDITS & PARS
DATA SELECTED FOR YEAR 1985

NATIONAL AVERAGES

POL. CD.	AUDITS	PROBABILITY LIMITS					
		LEVEL 1		LEVEL 2		LEVEL 3	
		LOW	UP	LOW	UP	LOW	UP
C42401 SO_2							
PA	756	-20	26	-18	22	-17	20
PARS	1326	-17	14	-13	12	-13	12